

AMERICAN FRUIT GROWER

Vol. XXXIX
No. 2

February 1919

Ten Cents
a Copy



Edited by Samuel Adams

Safeguard Your Crop with a Glidden Spray

Only by intensive cultivation and *vigilant spraying* can the American Farmer meet each year's increasing demands for FOOD. Government officials are urging the manufacturer to produce more spray materials and urging their proper use in the fight against plant-life pests.

The Glidden Company has more than met present day conditions. Through its complete organization and facilities, a line of dependable spraying materials have been produced. High quality sprays that meet every requirement of the National and State laws governing insecticide production. The line includes: Glidden Dry Powdered Arsenate of Lead, Glidden Dry Powdered Arsenate of Calcium, Glidden Dry Powdered Bordeaux Mixture and Glidden Dry Powdered Bordo-Arsenate, 1 lb. cartons to 200 lb. drums.

There is a Glidden dealer in your locality whose name we will gladly send you. Instructive spray literature is yours for the asking. Remember please that the name Glidden also signifies a complete assortment of paints; varnishes, stains and enamels for farm use.

The Glidden Company, Cleveland, Ohio, U.S.A.
The Glidden Company, Limited, Toronto, Ontario, Canada
Branches: New York — Chicago — Kansas City — San Francisco — London. Stocks in principal cities.

Glidden Dry Powdered Bordo-Arsenate offers the grower an opportunity to conserve labor by treating for both insect and fungus troubles with one spraying.

Glidden Dry Powdered Bordo-Arsenate

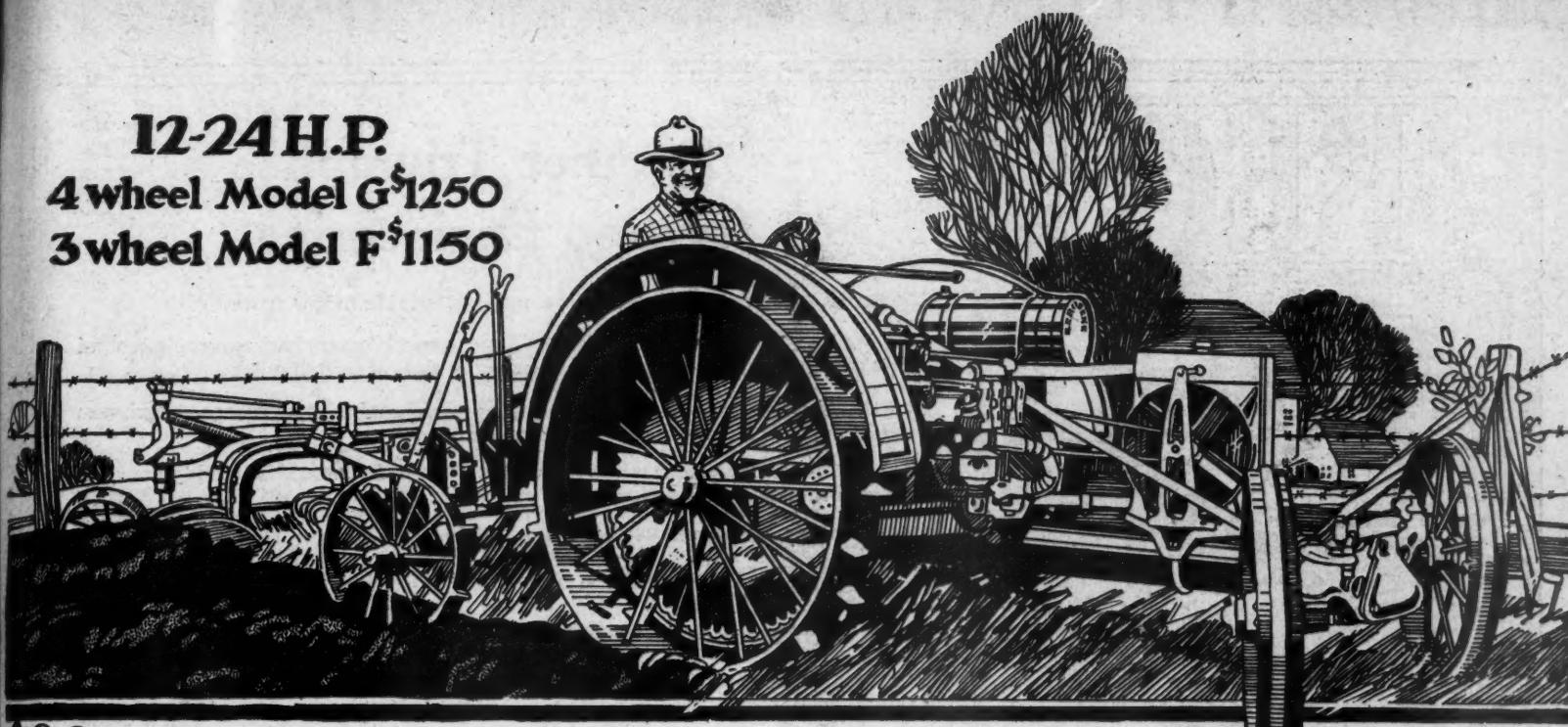
For Spraying and Dusting
ONE POUND NET WEIGHT

GLIDDEN

INSECTICIDES-FUNGICIDES

12-24 H.P.

4 wheel Model G \$1250
3 wheel Model F \$1150



**A La Crosse Tractor
means
a Happy Farmer**

THE LA CROSSE TRACTOR with its short turning radius, perfect balance and big power is the practical tractor for orchard and vineyard work.

The La Crosse Tractor turns short in its own tracks to right or left within a space of only 114 inches—36 inches less than its own length. This means you can turn easily at the end of rows or under the trees in between rows. The La Crosse "Model G" is the tractor with the *line drive*. You can sit on the seat of your implement or sprayer cart and drive the La Crosse with reins just like horses.

Let the La Crosse do your plowing, cultivating, mulching and spraying. You will have sufficient clearance so you can work up close to the trees without breaking branches or knocking down the fruit.

Saves Time In Spraying

Fruit growers know that their work is the kind that can't wait. It must be done at the right time or the crop may be lost. With a La Crosse Tractor, you can get your work done when it should be. You can take the tractor right into the orchard and use it for every operation from plowing to hauling in the fruit.

The La Crosse works equally well on soft ground and on side hills where other tractors fail. With its low center of gravity it is practically impossible to upset and the double brake differential keeps it from sliding

down the hillsides. This is an important feature for fruit growers with hillside property. Let us send you the name of some one near you who will show you how this special brake works on hills.

With a La Crosse Tractor to pull the sprayer you can cut down the time it takes for this troublesome job and use your horses for other farm work. No standing around all day in the orchard—no gee-ing and haw-ing trying to turn around. A La Crosse Tractor in your orchard will pay for itself many times over in hours, horsepower and manpower saved.

The Perfect Kerosene Burning Tractor

The La Crosse is the perfect kerosene burning tractor. The La Crosse holds the official low record for fuel consumption and plowing cost per acre. Its fuel cost record is officially recorded to be 21% less than that of its nearest competitor. The La Crosse Tractor consumes an average of only two gallons of kerosene an acre and does

not smoke or overheat. The La Crosse also holds the high record for non-stop efficiency—meaning less engine trouble than any other tractor. Its giant six inch bore, seven inch stroke motor furnishes an unrated reserve power which takes care of unusual requirements far beyond the rated horsepower.

WRITE FOR YOUR DEALER'S NAME

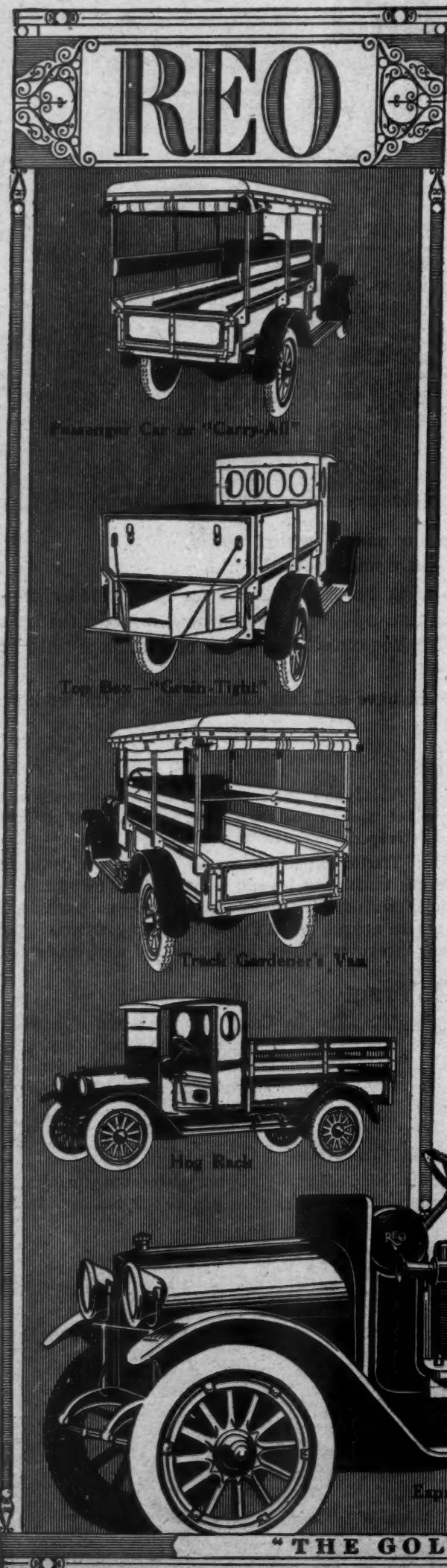
If you would like to know just how the La Crosse Tractor can save you money and work as well as the labor of men on your farm, write us for the

name of your nearest dealer. He will gladly put you in touch with a Happy Farmer owning a La Crosse who will show you how it has helped him.

La Crosse Tractor Company

**Department 9472
La Crosse, Wisconsin**

**La Crosse
TRACTOR**



Another Triumph for Reo Engineering

There has existed a great need for a more adaptable motor truck.

The need was not for a chassis, for the Reo "Speed Wagon" had proven, in several years of use, that this chassis is ideal for every class of farm hauling.

But there was great demand for a body that would enable you to carry a maximum load of any commodity regardless of its density.

Many attempts have been made to develop a body that would be readily convertible into several practical forms.

Some of these have been successful to a degree.

Fault with all of them, however, was too much complication—too many adjustments and connections to get out of order.

Such construction also ran into a lot of needless weight to be carried all the time.

It remained for the Reo engineers to solve the problem in the simple, direct, substantial Reo way.

And they did it, not by making a convertible body that would fold first into one form and then another, but by a set of sectional units with one basic body as a foundation.

This basic body itself performs fully fifty per cent of all delivery service.

No user will need all the extra sections.

Each user will, however, need one or several of them.

You buy the Reo chassis equipped with the basic—low express—body shown below.

Then, to fit your special service, you select such other attachments or sections as you find most applicable to your work.

This Reo body in its several forms meets every requirement of speedy, economical hauling—in city and suburban as well as rural service.

There are seven forms in all.

On the left we show four forms of this body.

The other forms you may obtain at a few dollars extra cost.

Demand is—tremendous. Always is for Reos, but this season more so than ever before.

Only way to be at all certain of getting a Reo "Speed Wagon" for early delivery is to place your order at once.

Today won't be a minute too soon.

Reo Motor Car Company, Lansing, Michigan

Price—Chassis equipped with low Express body
(shown below) \$1350 f. o. b. factory, plus Special
Federal Tax.

"THE GOLD STANDARD OF VALUES"

Subscription Rates

Three Years for \$1.00; or One Year for 50c.
Chicago and Canada, 75c per Year. Foreign, \$1.00 per Year.

Expirations—The date to which your subscription is printed on the address label of your paper. All subscriptions are stopped promptly at expiration. Before your subscription expires send \$1.00 for a three-year subscription or 50c for one year, and avoid missing an issue.

Advertising Rates

\$1.00 AN AGATE LINE FLAT, OR \$14.00 PER INCH.
Classified, 15c a word.

Entered as second-class matter Oct. 17, 1917, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

AMERICAN FRUIT GROWER

A consolidation of Green's Fruit Grower, Rochester, N. Y., Established 1860;

The Fruit Grower, St. Joseph, Mo., Established 1889;

American Fruit Grower, Charlottesville, Va., Established 1915

Published monthly by AMERICAN FRUIT GROWER CO., Inc.

329 Plymouth Court, CHICAGO, ILL.

Eastern Office: Rochester, N. Y. Home Office: Charlottesville, Va.

Samuel Adams, Editor

Robert B. Campbell, Publisher

Associate Editors

PAUL C. STARK MARY LEE ADAMS
CHARLES A. GREEN

H. R. MANKIN, Business Manager

J. E. FORD, Advertising Manager

J. A. BUCHANAN, Western Advertising Manager

Special Advertising Representatives

JOHN M. BRANHAM CO.

Chicago Detroit St. Louis

Atlanta

ROY RING, Minneapolis

New York

Chicago Detroit St. Louis

Atlanta

VOL. XXXIX

FEBRUARY, 1919

No. 2

The Essentials of Strawberry Culture

By S. J. Bole, Missouri

TO MANY people, the strawberry is the height of perfection in fruits. It is best when eaten in a fresh state, and yet it may be preserved in various ways to furnish a winter shortcake or preserves and jam, any of which can hardly be surpassed in delightful flavor and richness. The everbearing varieties have now made it possible and easy to have another strawberry season in autumn. The already popular strawberry is becoming more popular each year and the war gardens of the past two seasons should this year contain a bed of strawberries.

Of all the fruits, the strawberry should hold first place in the city or suburban garden. A few square feet of well cultivated plants will yield a surprisingly large quantity of fruit and, wherever a garden hose can be utilized, there is always the possibility of a maximum yield with either the standard or everbearing sorts. Then again, the enjoyment and good fun that comes from seeing plants grow, blossom and fruit is worth all the effort and expense.

Varieties to Plant

The first important step in the growing of any fruit is the selection of the best varieties to grow. While the strawberry is cultivated from Texas to Alaska, certain varieties grow successfully only in limited areas. The factors that determine the variety to plant are: climatic conditions, type of soil, sex, use and season. The Klondike and Missionary grow best in the southern states; the Aroma and Gandy in the central region; and the Dunlap in the northern states.

will result. These are sometimes the result of unfavorable weather conditions during pollination, but are often due to the self-sterility of a variety. In such a case, a variety bearing plenty of fertile pollen should be interplanted with the imperfect variety. In a large plantation, four rows of one may alternate with four rows of the other variety. Early and late bearing varieties blossom at about the same time and may be interplanted for cross-pollination. However, imperfect varieties like the Bubach, Haverland, Sample and Warfield are being quite largely replaced by such perfect



Strong, Healthy Plants as They Come From a Nursery

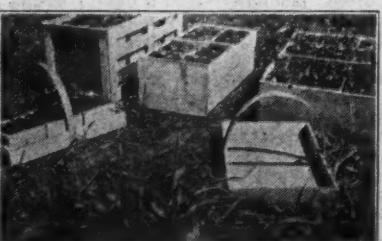
varieties as the Dunlap, Aroma, Gandy and Brandywine.

The selection of variety, also, depends on the season. The commercial grower often plants only a single variety, but a succession of varieties is often very desirable for extending the season for home use. There are early, medium and late varieties. Among the best early varieties are Warfield and Ozark. Dunlap, Haverland, Klondike and Wallace are among the best varieties having a medium season, while the Aroma, Gandy, Brandywine and Sample are the best of the late sorts.

Securing the Plants

For the home garden, the grower could get his plants from an old bed or possibly from the plantation of a neighbor. The greatest advantage of propagating from another strawberry bed is to secure a rapid and vigorous growth of plants. However, most growers will find it cheaper and more satisfactory to order plants from the nurserymen. One can hardly afford to dig only fair plants from a more or less diseased patch when vigorous and healthy plants can be bought for three or four dollars a thousand.

The nurseryman sets out his plants in the early spring and cultivates them well during the season without removing any of the runners. The plants are dug and tied twenty-five in a bunch. They have been kept from disease by careful spraying and are strong plants with plenty of green leaves.



24-quart Crates and One 16-quart Crate

Where to Plant

Strawberries will grow almost anywhere but thrive best on well drained soil that does not get too dry in summer. The strawberry plant is a surface feeder and often suffers from lack of water during the hot, dry period of summer. This lack of vigor as indicated by short roots and too few growing leaves, generally results in severe winter injury. The overhead Skinner system of irrigation for the commercial grower, and garden hose for the suburban gardener are the very best sorts of insurance.

While strawberry vines may be fruited many years, two crops is perhaps the best for ease of cultivation and size and quality of fruit. One of the most important factors for the large grower to keep in mind in the location of the site is that of air drainage. Strawberries are in bloom for an exceptionally long period of time and more or less of the blossoms are annually killed by the spring frosts.

While the bloom may be kept back by the late removal of the winter mulch or by the use of water, the site that has an elevation of a few or many feet and that permits the cold air to drain off to the lower levels is best.

Preparation of the Soil

One should avoid, if possible, the planting of strawberries in any kind of sod. If



Cultivating the Newly Set Plants

planted in the garden, the bed should be rotated with the other garden crops. This is a great help to the strawberries and an even greater help to the vegetable crops. The commercial grower should aim to grow a hoed or cultivated crop just before planting to strawberries. Such a crop as beans, peas, buckwheat or potatoes in the north and cowpeas or soybeans in the south, will leave the soil free from sod and in a loose, friable condition.

In the case of the heavy prairie and clay soils, fall plowing produces the best mechanical condition. This soil will then dry out quickly in the spring and can be either plowed again or worked deeply with a disc harrow. A spring-tooth harrow or a spike-tooth drag will leave a fine bed for the plants.

Fertilizers

A grower should not try to build up his land and grow a successful crop of berries at the same time. The plants may be set in well prepared soil where no fertilizers of any sort are necessary for the two crops. That the strawberry is not an exhausting crop is seen by comparing the number of



Removing the Winter Mulch by Thinning It Over the Row and Placing the Surplus in the Space Between the Rows

pounds of plant food removed from the soil per year per acre in the following table:

Crop	Nitro- gen	Phos- phorus	Potas- sium
Corn, including fodder	111	18	53
Wheat, including straw	49	7.5	33
Clover	80	10	60
Timothy	36	4.5	35
Strawberries	7.5	3	12



Planting by the Spade Method

However, the amounts of plant food removed by strawberries is no criterion as to the fertilizer treatment to be given. From experience, growers have found that too much barnyard manure results in too heavy a growth of plants, and yet plants must grow vigorously in order to produce a good crop. For the first crop of fruit, the manure should be composted to destroy

The Dunlap

Certain varieties are best adapted to certain types of soil. For instance, the sandy grows best on heavy clay soils while the Dunlap and Wilson grow well on the sandy soils.

The use for which strawberries are grown helps to determine the variety to plant. The Dunlap is one of the very best sorts to grow for home use while it is too soft and deteriorates too quickly to be a successful berry to ship well. One should plant a firm berry like the Missionary, Klondike, or Aroma to ship to a distant market. Personal taste also differs, some people preferring a firm, scarlet and dry acid berry, while others like best a the soft and sweet berry. The first of these is quite superior for canning and preserving because of a smaller amount of water and higher color.

As to sex in strawberries, certain varieties are perfect and certain others are imperfect. If strawberries are not well fertilized, imperfect berries or "nubbins"

the weed seeds; for the second crop, straw manure may be used for a mulch thus affording winter protection as well as plant food. The weeds and grain seeds will start growth but will not seriously interfere with the crop and the plantation can be plowed under as soon as the berries are picked.

In the north, a commercial fertilizer high in nitrogen is applied in the early spring with rather satisfactory results. In the south, a complete fertilizer high in potassium is generally used. The fertilizer is applied at the rate of from 200 to 2,000 pounds to the acre, and is either scattered broadcast in the fruiting row or applied in a furrow just to one side of the row. The roots do not extend far beyond the spread of the leaves, indicating that the fertilizer must be placed quite close to the roots. The adding of nitrogen makes the berries large and soft, and potash makes them firm.

The field may be marked out with a corn marker or, in case of the home garden, a line may be used. The distances vary somewhat with the section of the country, variety and system of training used, the average being three and one-half feet between the rows and eighteen inches in the row.

When and How to Plant

In the north, the plants are generally set in the early spring; the blossoms are removed if any form, and the aim is to grow the best possible plants for the next season's crop. In a home garden in case of favorable fall rains or by watering, the plants may be set in August and a light crop harvested the first summer.

In the south, where the long hot summers kill the plants, the plants become quickly established and a considerable growth is made during the winter months, a rather small crop is borne in the early spring and the vines are then plowed under.

Much care should be taken in setting the plants. "A workman is known by the chips," so a man who set out strawberry plants is known by the amount of foliage seen on looking down the rows a few weeks afterward.

The three necessary things in the successful planting of strawberries are: (1) to set the plants at the correct depth in the soil, (2) to spread the roots out so as to come in contact with a large amount of soil and (3) to firm the soil solid about the roots. The crown of the plant should be set just at the surface of the soil. The best time to plant is during or just after a spring rain and when the plants are still dormant.

Well developed plants from a nursery have long and well developed roots. Before a bunch is broken apart, the lower portion of the roots should be cut off by means of a sharp pocket knife. About four inches of roots are left and growth starts readily from these cut ends.

There are many methods of setting out strawberry plants, the two best being (1) by the use of a dibber and (2) a spade. A flat dibber is made from a heavy piece of sheet steel a foot long and four inches wide and having a stout handle attached at one end. One person sets plants with such a dibber by walking on his knees astride the row and planting as he goes. The dibber is grasped in the right hand, thrust into the soil, and then pushed to the right, leaving a V-shaped opening. A plant is picked from the basket with the left hand and inserted into the opening to the correct depth. The plant is held in place with the left hand while the dibber is withdrawn and the soil firmed solid about the roots.

The spade method requires two persons and is the best method to use. In carefully prepared and mellow soil, two men can set an acre a day. The man handling the spade can move backward along the row as it is planted. He inserts the spade, which is held backward, into the soil to the depth of six or eight inches and then presses the handle forward. This leaves a V-shaped opening into which a plant is placed to the correct depth by the other planter, who holds it in position until the spade is removed from the soil. The man on his knees then presses the soil firmly around the roots and picks up another plant for the next hill.

Care of the Plantation

Strawberries should be kept cleanly cultivated during the first summer. This requires frequent cultivating, especially after heavy rains, and from one to three

hoeings. The cultivation need not be deep and the work can be well done by using a one-horse cultivator. In the north, the ground is kept level while in the south the plants are generally grown on ridges.

Training and Pruning

Due to variations in both training and pruning there are several methods of growing plants. The most important ways of training plants are: (1) the hill, (2) single hedgerow, (3) double hedgerow and (4) the matted row.

In the hill system, all the runners are kept pruned off and the plants increase in size by the formation of new crowns instead of by new plants from runners. This method is sometimes used in the home garden and is generally used in growing the Superb, an everbearing sort.

In the single hedgerow system, one runner is allowed to take root on each side of the parent plant and in the direction of the row. The double hedgerow is the same as the single except that two runners are placed at each side of the hill instead of one.

In the matted row the runners are let form at will and the width of the row is regulated by the space left uncultivated. The number of plants that set in such a row depends on (1) the fertility of the soil, (2) the amount of rainfall and (3) the variety. The matted row gives about three times the yield of the hill system.

The Winter Mulch

The value of a mulch on strawberries varies greatly in different parts of the country. In the south the ground is not

the perishable nature of the strawberry, it should be either eaten or preserved as soon after it is picked as possible. For canning and preserving, the berries should never be left to get dead ripe, but should be picked when still quite firm and, in case of many varieties, before the whole of the berry has become red.

The local grower should aim to keep his plantation picked as closely as possible and not allow a portion of the berries to get fully ripe, as the ripening goes on rapidly after being picked. The fruit should still be firm when it is delivered to the consumer.

Harvesting for the commercial grower who ships to a distant market is a somewhat difficult problem, the solution of which has to be solved largely by experience. The important points to keep in mind are: (1) to pick the berries carefully, (2) to pick often and before the berries are fully red and (3) to place in an iced car as soon as possible after being picked.

Most pickers unless taught and then carefully watched, will crush berries in pulling them from the vines, hold too many in the hand at once or throw them to the box or basket. Each berry should be picked by the stem and not snapped off by getting two fingers under the berry and pulling it from the vine or by taking hold of the berry itself with the thumb and fingers. Pickers should be discharged at once who fail to pick correctly after a few trials.

The temperature of the iced car slows up the ripening process, thus permitting the berries to be from one to three days in transit and still reach the distant city in a

as cool as possible. If the packing shed is rain and bird-proof, a supply of crates and baskets can be stored here from one picking to the next. If one grows large berries, it is often worth while to "face" them as they are packed into the crates. This is always done in the packing shed. Medium sized berries of uniform size are used for this. The berries at the top of the "quart" are carefully removed by turning the package up until the uppermost berries roll into the packer's hand, the package being held over a table or shallow box. The corners are then filled snugly and the remaining berries are levered off, leaving enough room at the top for a single layer of berries. The berries are placed in rows with the large flat sides up and the hulls nearly, if not quite, hidden from view. While facing does not improve the quality of the berries it does greatly improve the appearance of the fruit.

Marketing the Fruit

Very often growers find it more difficult to sell strawberries than to grow them. This difficulty, of course, varies with different localities and during different seasons. In case of a local market, the grower may sell from house to house or to the retail grocers. In selling from house to house one should pick out certain streets and build up a trade by making regular trips from day to day and from year to year. This is the ideal method of selling berries of any kind, for it gets the fruit to the consumer in perfect condition, at a good price to the grower and at a trifling low price to the consumer. If a grower has an acre or more of strawberries in bearing, he may find it more convenient to sell direct to the local grocery stores.

In selling to retailers, the grower should get his berries picked each day in time to deliver them by say ten o'clock. The grocer can then deliver most of the fruit before dinner of that day. If the store has a large refrigerator, a few cases may be placed in this for the afternoon trade. By this method the crates are gotten at the next delivery and may be used over and over again, thus saving about a cent per quart over that of shipping to a distant market. There is no commission and no loss in transit. This is an ideal method of disposing of one's fruit.

The coming of the light auto-truck has greatly extended the local market. The writer for several years drew his berries three miles and then shipped seven. He could now drive an auto truck to this same city in twenty or twenty-five minutes. Many growers now drive thirty, forty and fifty miles to a market.

In case of strawberries, many growers are forced to ship to distant markets. This is especially true of growers in the southern and middle states who ship their early crops into the large northern cities. Have growers have to associate together in order to ship and sell to an advantage. The strawberry was one of the first fruits to be shipped under ice and the original methods have been greatly improved upon in recent years. Now, nearly all of the strawberries shipped are sold by co-operative associations. Now and then a grower can ship express to a retailer or wholesaler in a distant city and succeed, but the chances are much against him.

Renovating for Second Crop

There are various ways of renovating the strawberry plantation for a second crop in some cases a third or fourth crop. The work is done as soon after the last picking is made as possible.

It is a good plan to cut the leaves off with a scythe or mowing machine and, as soon as dry, these leaves are scattered along the rows and burned. Sometimes a certain amount of straw must be added and it is a good plan to burn when the wind is blowing so that too many of the crowns will not be killed with a slow fire. The burning over of the field will greatly aid in controlling the disease and insects for the following year.

Each row may then be narrowed by removing (1) a portion of each side of the row or (2) a portion of one side of the row. This can best be done with a disc harrow or small turning plow. A disc harrow is best to remove both sides of the row at once. If the soil needs it, either commercial fertilizer or composted manure is best. If the soil needs it, either commercial fertilizer or composted manure is then scattered over the field and the middles between the rows are thoroughly cultivated. This process thins the plants and furnishes available plant growth and stimulates

Continued on page 20



An Ideal Location for a Strawberry Plantation

frozen and the plants grow slowly through the winter months while in the north the snow serves fairly well as a mulch. This indicates why the mulch is so important in the central regions where the amount of snow is more or less negligible and where the freezing and thawing of the soil is severe.

In this central region, the winter mulch on strawberries is of far more importance than most growers realize. The most important reasons for mulching are: (1) protection from the cold, (2) protecting the fruit from dirt, (3) protection from spring frosts, (4) conservation of moisture, (5) keeping weeds in subjection and (6) adding plant food to the soil. The strawberry plant is perennial and evergreen. If sufficiently protected, the leaves remain green during the winter and start into growth early in spring. This is one of the most important reasons for placing a winter mulch on strawberries.

As clean straw is expensive and difficult to secure at present, some substitute will generally have to be used. Bean pods, corn fodder, fallen leaves, the crushed stalks of sorghum and similar material can be used though not as satisfactory as clean straw.

The mulch should not be placed over the vines until the ground becomes frozen, which is commonly in December. The plantation should then be covered with a uniform thickness of the material which will vary with the kind of mulch used. Four or five inches of loose straw is about right.

If the mulch is used to keep back the bloom to prevent frost injury it should not be removed until the plants begin to grow under the mulch and the leaves to turn yellow. A pitchfork is then used to thin the mulch over the plants which is then placed in the middle between the rows.

Harvesting the Crop

In case of the small patch in the home garden, there is little difficulty in knowing when and how to pick the fruit. Due to

Spray Guns and Spray Batteries

By H. A. Gossard, Ohio Agricultural Experiment Station

FRUIT growing has never been profitable or useful to men except as war has been systematically waged against the insect and fungous enemies of the orchard and garden. At present, more than in past years, the issue of the battle should be assured before it is commenced or it would best be omitted altogether. If the battle is not won it incurs considerable financial loss and the money and labor expended on it are non-productive and wasted.

On account of labor shortage, the small family orchard is likely to suffer more than

furnish 200 to 350 pounds of pressure, and this may be equipped with one or more of the new adjustable nozzles commonly spoken of as "spray guns." These deliver from 8 to 10 gallons or more of spray per minute, broken into a very fine mist, so that with two leads of hose, the inner side of each row of trees on either side of the wagon is covered as fast as the horses walk. A single sweep of the "spray gun" is often sufficient to cover that half of the tree next the operator. A quick adjustment of the nozzle will send the stream of spray to a height of 30 to 50 feet, thus

ful to give direction to the spray and enable the operator to drive it into the blossoms or against the undersurfaces of the leaves. The orchardist should procure the catalogs of several good manufacturers of spraying machinery and attentively study the mechanism and purposes of the various devices. He may then buy such of them as promise to add efficiency to his equipment.

Dusting Machines

The "dust spray" has been used against codling worm with considerable success for several seasons by a few experiment stations and a considerable number of orchardists. These machines cover about twice as much orchard in a given time as the newest liquid outfits furnished with "spray guns," and these new liquid machines work about twice as rapidly as the old-fashioned power machines. Since the dusting machines are not thoroughly tested nor their limitations established, our commercial Ohio orchardists have been buying them for supplementary machines, to use when work must be rushed.

The assumption, based on what I consider to be adequate proof, is that they will control leaf-eating insects and fungous diseases fairly well and should, therefore, be sometimes used to cover ground rapidly even if the percentage of sound fruit is somewhat less than it would be if the work were done in an equal period by two of the latest liquid-throwing outfits. As their merits are more fully tested, the power dusters may replace liquid outfits to a considerable extent, or they may fail to hold a very large place even as supplementary machines.

There are many excellent hand-dusting machines suitable for dusting small plots of potatoes and garden truck. Since in-

preparations should be used to the limit of their proved merits.

For dormant spraying, the miscible oils and several powdered remedies are excellent. Although the lime-sulphur solutions are bulky to transport, they are scarcely equalled in combination with arsenate of lead for spraying apple orchards in leaf and, where possible, must be obtained for this use. They are also standard for dormant spraying. Home-mixed sprays are generally dependable if the directions for mixing, which can be obtained from the various state experiment stations, are carefully followed.

Powdered arsenate of lead seems to be fully equal to the paste form. One pound of powder is approximately equivalent to two pounds of paste.

Timeliness

To control codling worm, curculio, budworms, aphids and some other insects and diseases, it is essential that the applications be made according to the following schedules called "Spraying Programs." These programs are based on the life histories and habits of the insects and diseases named, and are timed to kill them when such maladies are most amenable to the effects of sprays. Failure to obtain satisfactory results from spraying is often due to missing the pivotal day on which to make the application.

Abridged Spraying Programs

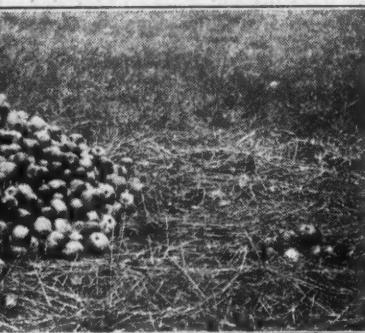
The commercial grower, whose livelihood is tied up in his orchards and whose labor will go wholly for naught unless he saves his crop, is advised to make more certain than usual the maximum production of his orchards if this lies in his power. If an extra spraying or two will increase the insurance on his crop, let him by all means provide for these if possible. The state experiment stations will be glad to advise what such programs must include. The crops in small orchards and gardens, stupendous in the aggregate, ought to be saved.

The number of applications in the following programs has been reduced to the minimum, in so far as is consistent with probable safety of the crops. However, in case they all cannot possibly be given, the omission of the starred numbers is likely to be followed by less loss than if the others are dropped, and those marked with daggers should be next after the starred numbers to be omitted.

Apple Spraying Program

No. 1 (Dormant spray). The dormant spray should be given to all orchard trees, except possibly sour cherries, which are scarcely attacked by San Jose scale. Use lime-sulphur solution—that is, the commercial concentrate, testing 33° Beaume or thereabouts, diluted with 7 parts of water—or a good miscible oil, usually diluted with 15 parts of water. Where powdered preparations of sulphur or other remedies of well-tested merit are available, use them. If in doubt as to their worth, write to your experiment station about them. For good results, spray from two or more sides of the trees, with the wind, when the temperature is 50° F. or warmer and the bark is dry. Good days in February and March should be utilized, but when delay is unavoidable it is better to spray even when the bloom is showing pink than to omit this application on trees that are infested with scale.

If the work is not done thoroughly, it is

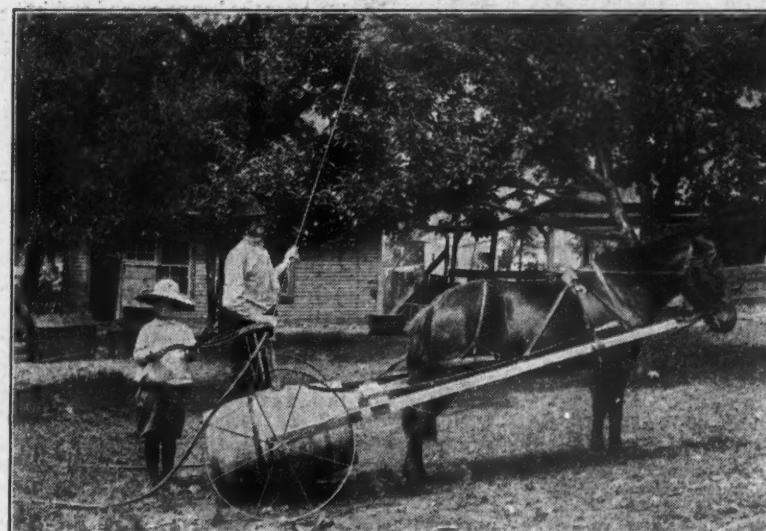


A Well Sprayed Tree—Sound Fruit in the Larger Pile, Wormy Fruit in the Small Pile

making it possible to cover quickly the largest trees from the ground.

Length of Hose

Most of the equipment now owned is old in type and should be operated as such. Barrel-pumps should furnish from 70 to 100 pounds pressure and gasoline and traction-outfits from 100 to 200 pounds. The hose lengths should be long enough to per-



A Small Spraying Outfit Suitable for a Few Acres of Orchard

mit the operators to pass to the side of the tree opposite the spray wagon so as to cover the entire tree from one "sitting" where this is desirable. The lead of hose for the operator on the ground should be 35 to 40 feet or more in length according to the size of the tree and the topography of the orchard. In the hilly orchard, the convenience of a long hose is more fully appreciated. The hose for the tower-man need not be more than 12 to 15 feet long.

Barrel pumps and large hand pumps should not be supplied with more than one lead of hose, but the spray rod may be equipped with two nozzles when one nozzle does not utilize more than half the capacity of the pump. It is best to spray with the wind even if one is obliged to return to the same tree on three or four different days in order to cover it from all sides. The wind reinforces the driving power of the machine to force the spray into cracks and under a thick crust of scales and bark, and also enables the men and horses to keep out of the drifting spray. Angled nozzles or "goose-necks," to which nozzles can be attached, are use-

septicides and fungicides of good quality are now being supplied in dust form, the use of dusting machines of all capacities will undoubtedly expand rapidly.

Spraying Materials

All spraying materials should be of high quality. Compactness of package is highly desirable, and for this reason powdered



An Unsprayed Tree—Crop Over 53 Percent Wormy, Sound Fruit in the Pile to the Left

about as well not to do it at all, for the entire cost of the work will go for naught. For a tree 15 feet high and with an equal spread of top, use about 2 to 5 gallons of diluted lime-sulphur spray; for a tree 20 feet tall and with an equal spread of top, 5 to 10 gallons; for a tree 25 to 30 feet high and with an equal spread of top, from 10 to 15 gallons. If a miscible oil is used, about two-thirds of these quantities will suffice. Every bit of bark and bud surface must be wet with spray. Inspect the work in a week or 10 days; and, if any spots escaped being covered, repeat the application over such areas.

There are but few counties, and probably but few townships east of the Mississippi River that do not have centers of infection of San Jose scale. If the orchard is well sprayed regularly, the owner may have a little scale for several years before he discovers it; while, if he does not spray, the trees are likely to become crusted over with several thicknesses of scale before he realizes that anything is wrong. Without spraying, infested trees usually die within four to five years or in a shorter period.

*No. 2 (Preblossom Spray)

The preblossom spray should be given in neighborhoods where scab and cedar rust are at all prevalent. It is quite generally omitted in northern latitudes where many orchardists use the dormant lime-sulphur spray as late as possible just as the leaves are pushing out of the buds. Some in the latitude of southern Ohio omit it, but this is somewhat risky. The materials are bordeaux, 6-6-50 formula, along with 40 per cent nicotine sulphate, 1 part in 700 of liquid (1 pint to 87½ gallons). Also, if cankerworms are abundant, add arsenate of lead paste, 4 pounds to 50 gallons of spray. Only one-half as much arsenate of lead powder, by weight, will be needed as of the paste form.

No. 3 (Calyx-Cup Spray)

This spray can never be omitted by the man who sprays at all. Freedom from worms in the apples depends upon it.

Lime-sulphur solution, commercial concentrate 1 part to 40 parts of water, along with arsenate of lead paste, 3 pounds to 50 gallons of spray, is recommended. If apple lice or aphids are present, it is well to add nicotine sulphate, 1 part to 700 of spray. Apply just after the blossoms fall.

This application should be very liberal; both surfaces of the leaves should be well bathed with spray, and it should be driven into the cup of every blossom. The tree will be dripping profusely before it is finished. Trees 15 feet high and with an equal spread of top will require from 3 to 5 gallons of spray; trees 20 feet tall and with an equal spread of top, from 8 to 12 gallons of spray; trees 25 to 30 feet tall and with an equal spread of top, from 15 to 20 gallons of spray. A driving mist directed into the flower-cups from a tower by means of a bamboo pole and angled nozzle will nearly always yield satisfactory results. The spraying should begin when about 90 per cent of the petals have fallen and before the weight of the young fruit has turned the cups toward the ground. Ten days after bloom is close to the outer limit of the period within which this spraying can be satisfactorily done.

*No. 4 (July or August Spray)

Lime-sulphur, commercial concentrated solution 1 to 40—or in neighborhoods where blotch or bitter rot occurs, as in the latitude of southern Ohio, bordeaux, 2-2-50 formula—plus arsenate of lead paste, 3 pounds to 50 gallons, may be used. Add nicotine sulphate if aphids or young leaf-hoppers are abundant. Near the parallel of 39 degrees, or about the latitude of Cincinnati, make this application about the first week in July; near the parallel of 42 degrees, or in the region of the lakes, from the middle of July to the 10th of August.

The nicotine ingredient in these sprays is to reduce the numbers of sucking insects; and, since these are responsible for much fire-blight infection, the addition of nicotine to the sprays will tend to reduce the amount of fire-blight.

Pear Spraying Program

The spraying program for pears is the same as for apples except that ammoniacal copper carbonate (see spraying calendar of your experiment station) should take the place of No. 4 about the second week in July. Do not try to combine the arsenicals with the ammoniacal copper carbonate spray.

Peach Spraying Program

No. 1 (Dormant spray)—Use lime-sulphur, commercial concentrated solution diluted with 7 parts of water, or use the home-boiled preparation (see spraying calendar of your experiment station). Apply in the spring just as the buds are swelling or in the fall as soon as the leaves have fallen.

No. 2—Use arsenate of lead paste, 3 pounds to 50 gallons, about 10 days after the petals fall, or when the blossom husks are shedding from the young fruit. The spray is necessary to control the curculio and to prevent wormy peaches.

†No. 3—Self-boiled lime-sulphur with arsenate of lead paste 3 pounds to 50 gallons should be applied in 10 days after No. 2.

*No. 4—to prevent brown rot, spray 3 or 4 weeks after No. 3 with self-boiled lime-sulphur, 8-8-50 formula, and repeat if necessary 2 or 3 weeks later. Many growers of peaches use the commercial concentrated lime-sulphur solutions diluted with 75 to 100 parts of water instead of the self-boiled mixture for sprayings Nos. 3 and 4, but they are not so effective in preventing the rot and are more likely to injure the leaves.

Plum Spraying Program (For All Varieties)

No. 1 (Dormant spray)—The commercial concentrated lime-sulphur diluted with 7 parts of water, or the home-boiled preparation should be applied in early spring or late autumn for scale insects.

No. 2—Use bordeaux, 4-4-50 formula, along with arsenate of lead paste, 3 pounds to 50 gallons, when the buds are swelling.

For European Varieties

No. 3—Use bordeaux, 4-4-50 formula, plus arsenate of lead paste, 3 pounds to 50 gallons, just after the calyx drops. This



A Few Days Too Late to Spray,
Calyx is Closed

is to prevent fungous diseases and wormy plums, made so by the curculio.

†No. 4—Repeat No. 3 two weeks later. If brown rot is not prevalent, this spray may be omitted. Subsequent treatments may seem necessary and should be given with the same materials.

For American and Japanese Varieties

No. 3—For American and Japanese varieties use the same spray as for the European varieties except that self-boiled lime-sulphur must be substituted for bordeaux. The foliage of these varieties is easily injured.

†No. 4—This spray is the same as No. 3 and should be applied 2 weeks after it. If brown rot is not prevalent, this spray may be omitted.

Cherry Spraying Program

No. 1—Dormant spraying with lime-sulphur, scale strength, is occasionally advisable on sweet varieties for the Forbes scale. San Jose is rarely serious on sweet scale. San Jose is rarely serious on sweet cherries and makes scarcely any headway on the sour varieties.

†No. 2 (Preblossom spray)—Use bordeaux mixture, 2-2-50 formula, with arsenate of lead paste, 3 pounds to 50 gallons, when the leaves are unfolding. This spray is effective against leaf spot, mildew and the curculio.

No. 3—Just after the blossoms fall, use arsenate of lead paste, 3 pounds to 50 gallons, plus nicotine sulphate, 1 part to 500 of spray, plus 2 pounds of soap dissolved in water to each 50 gallons. This spray will prevent wormy cherries, caused by the curculio, and will kill aphids or plant lice before they are greatly multiplied.

*No. 4—Self-boiled lime-sulphur (see spray calendar of your state experiment station), plus arsenate of lead paste, 3 pounds to 50 gallons, plus nicotine sulphate, 1 part to 500 of spray, should be applied 1 week after No. 3.

No. 5—After the fruit is picked, spray for leaf spot with bordeaux, 2-2-50 formula, along with arsenate of lead paste, 3 pounds to 50 gallons, if slugs are present. If neither leaf spot nor slugs are present, this spray may be omitted.

Grape Spraying Program

†No. 1—Bordeaux, 4-4-50 formula, should be used for mildew and black rot just before the blossoms open.

No. 2—Repeat No. 1 and add arsenate of lead, 3 pounds of the paste or 1½ pounds of the powder, when the berries are about the size of peas.

No. 3—Repeat No. 1 two weeks after No. 2. Add 4 pounds of arsenate of lead paste or 2 pounds of the powder if beetles of the rootworm or any stages of the grapeberry worm are present.

*No. 4—Bordeaux, 2-3-50 formula, plus arsenate of lead paste, 6 pounds, and 2 pounds of dissolved soap to 50 gallons should be applied thoroughly, by hand, under high pressure, to the clusters of fruit and to the vine from the 1st to the 10th of August if grapeberry worm is excessively numerous. This spray will also prevent fungous diseases.

Currant and Gooseberry Spraying Program

†No. 1—The dormant spray for scale insects, especially San Jose, is the same for currants and gooseberries as for other fruits.

*No. 2—When the leaves are unfolding use bordeaux, 4-4-50 formula, for leaf spot and mildew.

No. 3—After the leaves expand and just as the blossoms begin to open, for leaf-spot, mildew and currant worms, use bordeaux, 4-4-50 formula, plus arsenate of lead paste, 3 pounds to 50 gallons. The arsenate of lead will adhere long enough to kill the currant worms when they first appear.

No. 4—Whenever the currant worm is present, dust, when the dew is on, with hellebore, 1 part, and dry-slaked lime, 4 parts, or with Paris green diluted with 4 parts of lime. Hellebore is to be preferred if the fruit is three-fourths or more grown.

Raspberry and Blackberry Spraying Program

No. 1—If the bushes are infested with rose scale, San Jose or other scales, spray with lime-sulphur solution in dormant strength before the leaves appear.

*No. 2—if the pale brown beetle, *Byturus unicolor*, is present, use arsenate of lead, 3 pounds to 50 gallons, and apply when the buds are swelling.

No. 3—if *Byturus* is attacking the bloom, spray with arsenate of lead, 3 pounds to 50 gallons, while the blossoms are open.

†No. 4—for anthracnose, when young canes are 6 inches high, spray with bordeaux, 4-4-50, keeping the spray away from the leaves on bearing canes.

Strawberry Spraying Program

No. 1—When the leaves are about one-half grown, before blooming, spray with bordeaux, 6-6-50, for spot leaf.

†No. 2—Young beds should be treated as above 1 week later. This spray is not needed on old beds.

*No. 3—for leaf rollers and slugs, spray in late May or early June with a solution of hellebore, 1 ounce in 3 gallons of water.

No. 4—After the fruit is picked, mow the vines close to the ground and burn them on a windy day, or remove and burn; or spray the new growth with bordeaux, 6-6-50, for leaf spot. Drought following such a burning sometimes prevents a crop the next year.

Potato Spraying Program

No. 1—When plants are 6 inches high spray with bordeaux, 4-4-50 formula, combined with arsenate of lead paste, 5 pounds (or one-half this weight of the powder) to each 50 gallons of bordeaux.

American Fruit Grower

The fungicide is to prevent early blight and the poison is to kill leaf-eating insects, flea beetles and especially larvae of the Colorado potato beetle as soon as they appear.

No. 2—Repeat No. 1 two weeks later.
No. 3—Repeat No. 2 two weeks later.

No. 4—Spray with bordeaux two weeks later if any late blight threatens and continue at intervals of two weeks until the crop is matured if any late blight appears.

No. 5—An arsenical ingredient should be used in a spray given in early September in order to kill the second brood of the Colorado potato beetle. Paris green and arsenate of lime kill the beetles more quickly than arsenate of lead but do not adhere to the foliage through heavy rains like the latter. Where beetles and their larvae are present in large numbers, it is a good plan to use 3 or 4 pounds arsenate of lead paste (or 2 pounds of the powder) and 1 pound of Paris green in each 50 gallons of the bordeaux. The Paris green kills the insects quickly and the arsenate of lead remains on the foliage for many weeks killing any new larvae that hatch after spraying.

For the early sprayings when the vines are young, 50 gallons per acre may be sufficient, but when they are well grown in the fall 100 to 150 gallons per acre may not be too much.

SELLING APPLES WITH PILLS

By I. R. Merritt, New York

The drug store of our youth is a drug store no longer. It is a miniature department store that sells everything from pills to phonographs. This transformation has taken the druggist out of the prescription dispenser class. He is not a merchant in the fullest sense of the word. Of course the several large chain store druggists have been mainly responsible for this condition of affairs, with the result that the modern druggist is alive to every merchandising opportunity.

Yet in spite of this great transformation the drug store is still the mecca of folks in bad health. The drug store is also a "safety-first" station for folks who are always on the defensive when they are likely to contract sickness in any form.

Tonics, drugs and appliances go a long way, but nourishing foods are also an important factor in building up the human machine. As the Liggett chain stores figured it out, more people will rely upon the druggist's judgment than that of the grocer's in the selection of nourishing foods.

It would seem that Leggetts were biting off the hand that feeds them in announcing that "An Apple a Day Keeps the Doctor Away." But since they sold more than enough apples to cover the cost of the prescriptions they lost by people acting upon their advice, then their attitude was more than justified. Certain it is that their highly effective window display played an important part in bringing this about.

At the back of one of their store windows was a length of wall board divided into two sections and covered with orange-tinted paper. Each section was decorated with sprays of evergreen. A piece of thin twine was tied to the stem of each big rosy apple, a nail being hammered in the wall board just by the end of each branch of foliage, from which the apple was suspended. This, of course, added to the realistic effect produced by the apparently growing apples.

In the middle of each section of wall board space was left for the insertion of a white card. One such card carried the well-worn, but nevertheless true, adage: "An Apple a Day Keeps the Doctor Away." The second card contained the following announcement: "Delicious, Big, Juicy Apples, Six Cents Apiece, etc., per dozen."

Down in front, with sprays of evergreen branches in between, were market baskets filled with big, juicy, red apples that would tempt the appetite of an epicurean.

When a prominent chain of druggists introduce a line of merchandise, their example is generally followed by countless independent, live druggists throughout the country. This will mean a new and growing market for the fruit grower. It will mean more than that. The druggist will do more good to promote the consumption of apples than the average grocer or fruit man. The druggist will want the pick of the fruit, will pay the best price for it and will educate the public up to paying more for good apples. It is a field that the fruit grower and distributor should immediately proceed to develop.

More Food from Orchards

Dust Mulch Is Disappearing in West; Staples Are Grown Between Tree Rows

By Robert E. Jones, California

IN THE mad rush of events under the stress of unprecedented world conditions, many things escape our attention that we normally see. It is not to be wondered at, then, that a revolutionary change in orchard practice in the irrigated section of the United States is taking place without exciting much comment. And it is a reform that is making for more food from a given area of soil.

Just a brief while ago the ideal orchard of the west was blanketed with dust. It was a picture of decorum in tree and soil. Then the ambition of the progressive fruit grower was to have no clod upon the surface of his plantation larger than a hazelnut. He adhered religiously to this idea, and, after each irrigation, cultivators and clod-smashers paraded between the tree rows until a caterpillar would have left a nice, smooth trail in the soil.

Text books approved this method and the best farmers followed it. Experience had shown that the dust mulch conserved valuable moisture by breaking capillaries, or minute channels in the soil, through which the sun sucked water from the earth. For conserving moisture, the efficiency of the dust mulch still is admitted, but to the world's fund of knowledge has been added another fact—there is such a thing as too much dust mulch.

Dust Mulch Displaced

California may be taken as a typical fruit growing region of the irrigated west. Recently I visited the leading orchard district of California and the gradual disappearance of the perennial dust mulch is nearly everywhere apparent. It is still used in many places, frequently where there is little or no water for irrigation, but seldom with the pertinacity of an earlier day. Even where it is still used the best orchardists plant an annual green manuring cover crop.

No longer do we pass orchard after orchard with the finished appearance that formerly excited the admiration of the casual traveler. Young trees may be hidden in a field of corn, or merged into the green of an expansive tomato patch. Old orchards look unkempt with a rank growth of mixed cover that may pass as weeds to the uninitiated. Sometimes a hog may be seen rooting about in the tangle for windfall fruit, or a cow browsing aimlessly on rank growth of vetch, alfalfa or clover as in the old, neglected apple orchard back home. But the vigor of the trees is evident, and the fruit is there at harvest time.

Cruel Cultivation

There was a Moses in Colorado, Professor Wendall Paddock, a few years back, who originated the term, "cruel cultivation." He cried out against constant clean culture as a practice that was murdering life-giving bacteria in the soil.

Modern agriculture recognizes that it is the action of bacteria which releases elements in the soil necessary to plant growth.

Without moisture and air these bacteria cannot live. Humus, or vegetable matter, leaves and stems and roots, decaying in the soil, provide channels for entrance of air and water. Soil deficient in vegetable matter bakes, thus barring the entrance of air and moisture and killing bacteria. The deeper humus extends in the soil, the greater the amount of fertility available.

Doubtless it was the coming of green manure cover crops which started this change in orchard culture. Green manuring, once the orchardist grasped the idea and made the acquaintance of nitrogen-gathering bacteria, spread like wildfire.

of trees, sowing after the cover crop has been turned under, harvesting food and turning under the straw for more humus.

The most radical stage has been reached by growers who have quit plowing altogether and have planted a permanent leguminous cover crop turf. They harvest the excess growth in summer for hay, and pasture sheep, cows or hogs among the trees after the fruit has been picked. These men have anchored to the elemental truth that livestock is essential to a lasting agriculture. And they have learned and put into practice the principles set forth by George H. Elliot of England who wrote:

staples. Intercropping, practiced to a limited extent before, has spread tremendously, particularly where ample water is available. I believe it will be universally practiced now the war is over, as the old idea that the intercrop would be disastrous to trees seems to be disappearing. The system is disastrous only under mismanagement and neglect.

Undoubtedly it was deficiency in organic matter, characteristic of soils in the semi-arid part of the United States, which forced modification of clean culture by the use of cover crops.

East and West Contrasted

The vital differences between eastern conditions and those of the west, are brought out by Professor W. M. Mertz of the California Citrus Experiment Station when he says:

"We start with less organic material than do eastern farmers. What we have is richer in plant food, ordinarily, but under cultivation our soils become depleted more rapidly than under eastern humid conditions. We have the soil at a higher temperature during summer, and we also do more cultivating than the eastern farmer, primarily because water is an important factor with us and we cultivate to conserve moisture. We conserve moisture in cultivating, but we exhaust organic matter just as surely."

Mr. C. V. Freed, an orchardist of Placer County, Cal., where more than 3,000 car loads of shipping fruit is produced each season, first brought to my attention the striking features between the semi-arid west and the eastern portion of the country in regard to organic matter in the soil.

"On the level prairies of Illinois," said Mr. Freed, harkening back to his youth, "after we had removed a crop of hay, rye, barley or wheat, the rainfall was such that weeds would grow as high as a horse's back. About October we turned them under with a three-horse sulky plow. That ground was prepared for corn. It was entirely too rich for wheat and the smaller grains. Wheat and barley would fall down, and rye would grow six feet tall. By turning under those weeds we were enriching that soil."

"I am not pleading for the life of the weed, but I have thought ever since my days in Illinois that weeds were not an altogether unmitigated evil. I rather believe the good Lord knew what he was about when he created weeds."

Clods Follow Dust Mulch

Thus, while the practice of the middle west with which Mr. Freed was familiar, maintained humus in the soil, it was different when he came to California. No rains came to sprout weeds after harvest. This applies generally in the semi-arid west.

"Nearly thirty years ago, I became a fruit grower in Placer County," continued Mr. Freed. "I began plowing and cultivating religiously. I worked the ground



Bean Crop Grown Between the Rows of a Young Pear Orchard

It was followed by a varied assortment of tree-row cropping methods, until today we have some fruit growers who are taking nearly as much return from the space between trees as they get from their trees, apparently without injuring the orchard. Systems employed range from the use of an annual cover crop purely to benefit trees, to growing a perennial cover crop, the surplus of which is fed to livestock.

Cover Crops Practice Grows

Growers in the first stage of this transition are using winter cover crops and plowing them under in the spring, after which they follow clean culture until fall. Owners of young orchards, even some of those which are in the early bearing stage, are planting food crops between the rows

"The cheapest manure for soil is a turf composed largely of deep-rooting plants."

"The cheapest, deepest and best tillers, drainers and warmers of the soil are roots."

War Hastens Change

The food crisis which came with the world war is playing an important part in the change. It has had an accelerating influence, has turned an evolutionary movement into a revolutionary one. Patriotic growers put aside fears of damaging their trees by catch-cropping. They planted beans, barley, wheat, tomatoes or seed, all sorts of vegetables and fodder crops between the rows. If there were any doubt as to the necessity of fruit for food in the war emergency, they wanted to do their part in contributing to the supply of



Onion Seed Crop Grown Between the Rows of Prune Trees



Tomatoes Grown Between the Rows of a Young Pear Orchard

all summer until you could have tracked a jack rabbit across my place. I continued the practice until you couldn't track a yoke of oxen across the orchard. Constant cultivation turned up humus, the sun burned it out, and in a few years, I had clods as big as your head in place of the dust mulch that was the pride of my work a few years before.

"I had reached the end of the road. Here! something must be done, I told myself. It wouldn't be fair to leave such a depleted place as this to my children.

How He Reclaims Orchard

"I tried to get manure, but couldn't get enough to go over it all, so between every other tree row I put manure and planted burr clover. When spring came I had a fair crop of clover and a splendid crop of weeds. I did not plow, but let these weeds grow through summer. Next fall I harrowed crossways to drag the weed and clover seed across the adjoining space between trees which had been plowed. The following year I reversed the process. I'd rather have legumes than weeds, but my soil had become so poor legumes would hardly start. This system is reclaiming my orchard.

"In the old dust mulch days, not alone was the sun burning out my humus, but I was losing fertility on the hillsides by erosion. In one place the water washed six gullies deep enough to hide a horse. Today, if a gopher breaks a ditch at night, the water won't tear up the ground farther than the next tree row. In the old days the cream of my land was being washed into the valley; today the valley farmers are welcome to all they can get of it."

Mr. Freed's plan is a unique system of cover cropping developed in and adapted to his own foothill region. It represents the first step in the change from the old clean culture method. It looks only to the improvement of soil conditions for the benefit of trees.

Says Intercrops Help Trees

Dr. J. G. Berneike of Santa Ana in Southern California, has gone a step further.

"I assert," said Dr. Berneike, "that intercropping, properly managed, will help young trees grow and will help bearing trees to yield a full crop. Not only this, but the system will pay the farmer a better income than if no intercrop is raised. My experience of the last nine years has proved it to my satisfaction. I venture to say that the top soil of my orchard has improved 50 per cent in fertility and my tree crops have compared favorably with those of the locality, season by season.

"I find an intercrop has the advantage over a cover crop in that it feeds my stock and my land both, and saves the money for feed and fertilizer. Two years ago I owned a walnut and apricot orchard near Santa Ana; now I own a 10-acre Valencia orange grove. At present I have lima beans, millet, corn and alfalfa as intercrops. The bulk of this goes through the manger. Cows, horses and hens turn it into fertilizer which goes back to the land. I get humus to improve the soil and a quickly available fertilizer for the next crop. With a pumping plant on the place I keep things going all the time with rotation of crops. My young trees look fine, and the beans, too. I have just harvested potatoes and put millet in their place. I expect to put in melilotus when the beans come off, and to turn that crop into hay."

This man managed to take away some of his intercrop without injuring the orchard because he returned manure to the soil.

Great Value of Legumes

Undoubtedly legumes are best for planting in an orchard. That is why beans may be found so generally in California grown as a food crop between the rows of trees. Pods are robbed for human food and straw is returned to the soil. Careful growers, who are planting other than legumes for food crops, usually grow a winter leguminous cover crop, plowing it under in spring and then planting a catch crop of potatoes, tomatoes, seed corn, and sometimes hay and grain.

The value of leguminous crops for manuring as opposed to other green manures was strikingly illustrated by a series of experiments by Professor Mertz at the California Citrus Experiment Station at Riverside. Tenth of an acre plots were used, nine with leguminous plants and eight check plots.

In reporting these experiments, Professor Mertz says:

"The legumes were grown in winter, planted in September or October and turned under in February or early March, occupying the land during five months of the year. Field crops, such as corn or potatoes, occupied the land during summer. Thus we had an annual field crop and an annual legume stand used as a green manure.

"After plowing in the barley we got a crop of 98 sacks of potatoes. That is a good yield of potatoes, but the yield from the clover plot, representing the best of the legumes, was 150 sacks. There were 52 sacks of potatoes due to nothing more than turning in clover rather than barley."

An Interesting Experiment

Professor Mertz tells of an orange orchard near Ontario, the soil in which demonstrated the value of leguminous green manure as compared to commercial fertilizer alone.

"Tomatoes were planted down the middle," he said. "All the land had been treated with commercial fertilizer. One could see all the difference in the world in the tomatoes. You could walk to the point where the cover crop had ended—there had been a cover crop for two years. At that point the tomatoes ended, too. Hardly any tomatoes were to be found on the fertilized area that had not also grown a cover crop, while on the cover-cropped area it was figured the tomatoes would run 15 tons to the acre, which is a good yield."

Intercropped Even Wheat

The world's call for more wheat has led many orchardists to plant cereals between the rows, even though grain is believed to interfere with trees more than any other catch crop. In the Los Molinos, Tehama County, district, many farmers got good yields of wheat in their young orchards this year, but they irrigated judiciously to keep trees growing.

While the practice is not generally recommended by authorities, W. K. Norris, in the heart of the Sacramento Valley, grew a crop of barley this year in his young prune orchard, and did not irrigate the trees until after the catch crop had been removed.

"I have twenty acres of three-year-old prunes with the trees 25 feet apart," said Mr. Norris. "Between the rows I drilled in a 10-foot strip of barley, so that I figure I had a little less than nine acres of barley, which yielded 218 sacks, or 24 sacks to the acre. The trees are looking fine though they had no irrigation. Of course, if I had not planted the whole acreage, but had left some for comparison, I might be able to see a difference. I am satisfied with the experiment. The orchardist must take some chances now, anyway, the need for cereals is so pressing.

"Last year I grew more than 100 sacks of dwarf milo and several tons of pumpkins in my two-year-old almond orchard, and I am satisfied it did not damage the trees for they look as well as any in this locality the same age."

Livestock and Crops

Along the Sacramento River at Hood, where the soil is rich and level, furnishing ideal conditions for double-cropping, E. A. Gammon is securing maximum production from his orchard land. He is a highly successful pear grower who practiced clean culture for many seasons and made money, shipping his fruit to New York year after year.

Gammon is the kind of man who gets down to fundamentals, and the old axiom that any permanent system of agriculture must rest on livestock kept haunting him. When he reached a decision several years ago, he plunged deep, so that today, instead of being only an orchardist, he is a livestock raiser on a large scale as well.

"We planted the 80-acre pear orchard to a combination of vetch and melilotus indica, which is yellow clover," said Percy Gammon, the son, who had charge of the orchard. "To be sure of getting a good stand we inoculated the seed with nitrogen-gathering bacteria. Before planting we prepared a permanent irrigation system—that is, we made the checks and simply sowed seed over them as one does in planting alfalfa. This was an easy matter as the land in the orchard is level.

"Our system depends on plenty of water for irrigation, and we have it in the river just over the levee. We planted the cover crop in fall, and had a good stand early in spring when we turned in fifteen sows, which we had bought in the mean-

time. But even the sows could not keep down the cover crop and we turned in a band of pure-bred Hampshire sheep which father had bought a few months before. We pasture the orchard throughout the season.

"This cover-cropping or double-cropping system has worked out so well that I don't know why somebody didn't discover it before. We figure that the manure from hogs and sheep offsets any loss in fertility due to feeding. If there is any other loss it is made up by the fact that we don't burn out humus through cultivation. In addition to profit from animals, we are making a big saving in labor by not cultivating. Under the old system we cultivated after each irrigation, pulverizing the soil thoroughly to conserve moisture.

Hogs a By-Product

"Our books show that the saving in cultivation the first year amounted to \$987 and labor was a lot cheaper then than now. We cleared \$1,000 at least on hogs the first year. We started with fifteen sows which cost \$187.50—we bought the gilts cheap. During the year we slaughtered fifteen barrows weighing about 265 pounds each, which I figure at \$562.50, and the meat was used while our fruit picking force was here. Then we sold \$215 worth of barrows, and at the end of the year we still had what I figured to be \$875 worth of hogs, seventy-five in all, including the pigs.

"These hogs are almost entirely a by-product of the orchard. The only feed we purchased was a little middlings for sows before farrowing. I don't maintain that it is good practice to raise hogs only on pasture, but we have been too busy with fruit growing to pay much attention to them and may work out a better feeding system later.

"Outside of the sows and sheep our only capital investment for the stock was a hog-tight wire fence to put around the orchard. We knocked a few houses together out of old lumber around the place. I don't think labor of building these houses cost us more than \$10 or \$20.

"Besides definitely increasing the money return, hogs and sheep are a decided benefit in the orchard, for they clean up all diseased and decaying fruit which falls, thus helping us to control pests. They clear out weeds, water grass and Johnson grass."

Greater Fruit Bearing Surface

There is another thing that will appeal to the reader, if he be an orchardist, and that is the system of pruning made possible by a permanent cover crop. In the orchard, the elder Gammon pointed out that his trees are wide-spreading. They nearly fill the gap between rows. In fact he has pulled out plum trees which had been set out with pears.

The pear trees were a mass of fruit; I don't know that I ever saw more fruit on trees, and the Japanese foreman said some Buere Hardy trees would yield as high as forty boxes each.

"You can see that it would be nearly impossible to cultivate these trees," said Gammon, "for we let the laterals start low and even a small orchard tractor would have difficulty getting near the tree because of over-hanging limbs. See how much fruit the laterals bear—a man could pick ten or twelve boxes without a ladder."

It was true, from some trees a 5-year-old child could have picked a box or two from the ground.

"I contend," said Gammon, "that by not cultivating, it is possible to have a great deal more bearing surface."

In an adjoining orchard he showed me the difference. Pear trees there were pruned high to leave space below the limbs for teams. Not more than half a dozen pears could be reached from the ground and trees were still growing syaward with little growth horizontally.

Proof of Good System

"The first season after I put in the cover crop and quit cultivating," said Gammon, "a prominent fruit man passed my place. I was told he said man who was too lazy to cultivate his orchard should not have one; that I was ruining my trees."

"Maybe I am lazy, but that is not why I quit cultivating. I've had the cover crop for four seasons and my orchard had annual cover crops for many years before that. After trying both methods, I am for permanent cover. Many of these trees have been bearing for a quarter of a century, and never did they have more fruit upon them than this season."

"When I go into the orchard I try to size it up for condition just as one would judge an animal. If the trees are in good condition, the method of treatment is right. What do you find in my orchard? The leaves are green; there is a vigorous new growth and the fruit is on the trees and plenty of it. Doesn't that show good condition? What other testimonial for my system could be asked?"

Orchard, Stock and Intercrops

In the foothills of Sacramento County, J. P. Cox of Folsom had adapted the intercrop plan, or orchard-livestock combination, to a totally different topographical condition. His farm comprises about 460 acres of which approximately 80 acres are in a little vale and suited to fruit growing. The remainder of the tract is of grazing land with a brush, scrub oak and pine cover. If the rough land were cleared and prepared to receive water, it would do for orchard, but the plan of Mr. Cox calls for a different use. In the hills he has a herd of beef cattle, which get their concentrated feed from between the tree rows, returning therefor manure dropped in the dry lot at feeding time.

Trees on the Cox place were planted about five years ago and they have had a truly remarkable growth, even though land between them has been giving a catch crop return each year. Trees were planted twenty-two feet apart, and last year, in a portion of the orchard bayo and pink beans were planted, yielding twenty sacks to the acre for the land planted. These were sold at \$6 a sack. Bean straw was stacked and fed to the cattle, and then sent back by way of the manure spreader.

In another part of the orchard Mr. Cox planted field pumpkins, raising forty tons. These were piled away, and during winter fattened a herd of 100 hogs. The hogs had been started on three 10-acre lots planted in grasses and barley. The grass lot was fed off in early spring and then hogs were turned into green barley. When this was gone they were turned into ripe barley. In summer they had field turnips and various waste from the orchard, which carried them until fall when they were turned into the orchard to clear out the weed growth, old pumpkin vines and other by-products not gathered. At night they got their meal of pumpkins, and when the pumpkins were gone the barrows went to market.

Change is Permanent

What does this change in orchard methods mean—has it yet reached its fullest extent? It means, as I see it, that the zenith of specialization in fruit culture has been reached; that fruit farmers are becoming general farmers. There may be fruit specialists, in the old sense of the word, for generations to come, and some clean-cultivars. But undoubtedly the tendency is to grow other crops, too, and to carry livestock in conjunction with orcharding so that the full service of the soil may be exacted and its fertility maintained.

JAPANESE WALNUTS

Editor of AMERICAN FRUIT GROWER: I get some interesting reading from the AMERICAN FRUIT GROWER, and thought a word in return might be acceptable.

I planted a Japanese walnut three seasons ago. It grew finely the first season, two feet or more on several branches, but during the following winter it was killed back to three or four buds on the season's growth.

The following summer it grew faster than before. I thought it would winter again and that I would have to dig it out as useless. This last winter, as you know, was very severe, the temperature here goes from 20° below to 28° below, remaining so sometimes for a week or ten days. Many shrubs were killed by the cold, many peach trees were wholly or partially winter-killed, and all fruit buds on peach trees failed to flower, but the spring the growth started in the Japanese walnut without a trace of winter-killing. It is growing faster than any other tree I set out.

In trimming some walnut trees to place I left a cutting in the ground where the trees had been heeled in. It took root and is growing. Perhaps walnuts can be propagated by cutting in June or July.

ANDREW FOULDS, New Jersey.

An ambitious man puts it into the power of every malicious tongue to throw him into a fit of melancholy.

With Our Editor

Our New Publisher

MR. ROBERT B. CAMPBELL, of Richmond, Va., who has been a joint owner with me of the **AMERICAN FRUIT GROWER** since its organization, has now become actively associated with me in the management of the magazine, and will be known as the Publisher. Due to our program of expansion and greatly increased business, several other important additions to the organization will soon be announced.

These arrangements will enable me to devote the greater part of my time to the editorial development of the **AMERICAN FRUIT GROWER**. A number of new features and departments of great interest to fruit growers have been added, started with the February issue, which will make the magazine of still greater value to our subscribers.

At this time, I wish to express my hearty appreciation of the generous co-operation that has been given me, as editor and publisher, by subscribers, advertisers and agencies. This has enabled me to make the **AMERICAN FRUIT GROWER** the "National Fruit Journal of America."

SAMUEL ADAMS, Editor.

Theodore Roosevelt, Man

WITH the death of Theodore Roosevelt, a figure, unique in all history, has passed from the world. It would be impossible for one of Mr. Roosevelt's impulsive temperament and absolutely decided views, to fail to make enemies, but what a peculiar talent he had for making friends! In the enthusiasm with which his followers glowed there was much more than the admiration men feel for one who promulgates the doctrines they believe in. The emotion he aroused was largely personal. He was the most widely beloved man of his times, perhaps of any time. The atmosphere in which he moved carried no chill for he fairly radiated warm humanity.

It is not our intention to go into the so-called Rooseveltian policies, but there are certain broad aspects of the man and his character which appeal alike to political friend and foe, and these are worthy of consideration and perpetual esteem.

We suppose, if the masses could express the one quality of this great American which stirred them most, it would be voiced in the words "He was the gamiest fighter going." Roosevelt loved a good fight whether of muscles or wits, and he never lay down in any struggle he entered into. As a nation we certainly adore pluck, and he had it in superabundance.

His extraordinary activity of mind and body was admired by men of every political creed. It has been said that he had the highest powered dynamo of any human being. It is probable that the example and appeal of Theodore Roosevelt had a tremendous effect in "speeding up" men and women all over the country who were inclined to loaf. He made it fashionable to be doing something rather than to be merely an onlooker.

Another striking point in his character was his high moral standard. He preached and practiced the homely, domestic virtues. He stood for the purest ideals of the American home. Did anyone ever hear Roosevelt speak lightly of "sowing wild oats," or advocate that all "young men should have their fling?" Never. He boldly took the position that virtue is manliness, and such was his fame as a "man's man," a thoroughly masculine and virile personality, that many a youth who might have fallen into the immature error of fancying that to be good meant to be a "sissy," had his eyes opened to the fact that weakness really lay on the other side, and that strength was manifested more in self-control than in self-indulgence. The home life of America owes much to the fact that Roosevelt was idolized by millions of young men who were fain to follow where he led, and who found that he led them over rough places indeed, but always by the straight and narrow way.

To a large majority of our people a certain savor has passed from life with the passing of Theodore Roosevelt. With all his positive and downright practicality, romance enveloped him, and he will take his place in history not only as a great big man, but as the most picturesque figure of modern times.

Food Drying Industry

THE Department of Agriculture has started a project for the establishment of an industry for drying fruits and vegetables. An appropriation of \$250,000 is included in the act to enable the Secretary of Agriculture to determine the best means and processes of dehydration, and to disseminate information as to the value and suitability of dried products for food.

There is provision for co-operation with commercial drying concerns. An advisory board has been designated to administer this appropriation and to outline and control the work to be done under it. This board consists of one representative each of the Food Administration and the Sanitary Corps of the Army, and of representatives of the bureaus within the Department of Agriculture which are concerned with food production, regulation and conservation.

Such a practical project must appeal to everyone who feels the tragedy of food waste anywhere while there are large sections of the world either starving or insufficiently supplied with food. Waste of food, seems in itself intrinsically wrong, and when there are hundreds of thousands who would gladly eat what we in our superabundance throw away, it becomes a duty of prime importance to use every means of increasing and conserving the world's food supply.

This is the larger aspect of the measure, but looked at from a more personal and nearer point of view, it is gratifying to our farmers and fruit growers to see a means provided of making profitable use of their hitherto lost surplus of fruits and vegetables.

Are There Too Many Churches?

NOW THAT the question of merging the many Protestant sects into one broad Christian church has been advocated from the pulpit, we may say that we have long held the view that there is an enormous waste of spiritual force through the breaking up of the Protestant churches into so many different denominations. To think of there being 140 religious bodies in the United States is little less than appalling.

It must be perfectly evident to the most casual observer that there can be no combined effort among this multitude of conflicting sects, in the sense of combination in its most effective form—where all unite with a common interest and, as one might say, pool their strength for the attainment of the desired object.

The laws of nature are the same whether applied to religion or to other manifestations of human activity. It is wasteful in the extreme to attach so little importance as many of us do, to the conservation and concentration of the energies of the Protestant church. We do not even discuss a union of all religious bodies. The form of faith that suits the Anglo Saxon may well be unfitted for the Persian. Such differences as exist between the Protestant and Roman Catholic churches amounts to more than a mere distinction of form, and where there is no opposition there is apt to be loss of keen vitality.

The churches themselves are realizing the importance of curtailing this endless splitting up into groups who are often more interested in advancing their individual church than in pushing the broad claims of Christianity. Dr. G. E. Hunt, Presbyterian pastor at La Crosse, Wis., recently made a powerful address, in the course of which he roused great enthusiasm among his audience when he advocated the merging of the Protestant churches of the United States.

Dr. Hall cast no slur upon any organization, as he said that "each has an aspect of truth. Truth is bigger than any man or group can apprehend. Each has something big, for great movements do not grow about small principles." He spoke of the old days of denominational enmity and jealousy among the pioneer villages where there would be "five or six churches before the stumps were out of the streets or there were more than three stores. It wasn't zeal for the kingdom of God, it was zeal for 'my church.'"

Very interesting to us all was his assertion concerning the laymen, among whom, he said, there had long been a growing discomfort at the unseemliness of these differences, and a growing sentiment for unity. The good Doctor wanted to laugh when the conference at Philadelphia, composed of 150 delegates from 19 American denominations, "solemnly proposed a campaign of education among the laymen" to prepare them for the idea of merging the Protestant churches. "I believe that the laymen have been ready for this change for years, and it has reached the pulpit at last."

Orchard Problems and Their Solution

By Paul C. Stark, Associate Editor

Q. DOES top-grafting a seedling apple tend to improve the quality of the seedling if some branches of the old tree are left?—J. K. K., Indiana.

A.—Changing the quality of a seedling apple by top-grafting other varieties on the tree is a question that has caused considerable discussion. Some experiment stations have carried on experiments which have tended to show that interpollination of a variety with other varieties, slightly changed in some cases the quality or shape of the fruit. However, as a general rule it can be said that cross-pollination does not change to any appreciable extent the resulting fruit. The seed in the fruit is the result of the cross of the two varieties and if planted and grown to bearing age it would probably show more or less of the character of its parents.

Making Grafting Wax

Q.—Will you please give a formula for grafting wax or advise me where I may procure same? Also, any books or instructions relative to this work?—L. E. G., Michigan.

A.—To make grafting wax, we recommend the following recipe:

2½ lbs. bee's wax.
2½ lbs. resin.
½ lb. tallow or linseed oil.

This mixture should be brought to a boil and stirred thoroughly. When thoroughly mixed, place contents in a pail of cold water and when cool enough to handle work like molasses candy, until a pale yellow in color. On cold mornings it may be necessary to use a little warm water or artificial heat to work. The entire splice should be covered say $\frac{1}{4}$ inch. "The Principles of Fruit Growing," by Bailey, is a good book for you to read, as all fruit growing operations are well covered. Any local book store can supply it.

Q.—I have a 20-acre apple orchard 9 years old, clean cultivated, up-to-date, and growing crops between the trees. Will it be safe for me to pasture sheep in the orchard or will they damage the trees?—M. D. H., Wyoming.

A.—Your plan of growing and cultivating crops between the trees is a good one and I advise it. If your trees are in a good healthy condition, therefore at the right age and proper shape to make you money, I would advise you to continue cultivating between the rows and not to use your orchard for a pasture. It will tend to make the trees less vigorous. The lower limbs and foliage will be damaged. Keep the sheep out. The sheep would keep down the weeds and grass, but that would not conserve the moisture. Cultivation with the use of the dust mulch will save the moisture for your trees and crops.

Q.—I am interested in the Golden Winesap apple. Have you ever investigated it?—W. D., Kansas.

A.—I know the Golden Winesap and can recommend it to you as a first-class, late-keeping yellow apple. It looks very much like the Winter Banana. I believe it to be a very good sort for planting.

Quinces Pay

Q.—(1) Is there a good market for quinces and where? (2) If an apple tree 20 years old will produce 20 bushels of apples that will sell on the market for \$2.00 per bushel, will quince trees planted 20 feet apart produce enough fruit at the price they generally bring to equal the apple tree in profit? (3) What varieties of quince would you suggest that I use? (4) Do quinces require as many sprays as apple trees in order to produce fruit of a good quality? (5) What varieties of plum seem to be the best for market? (6) How long will it take them to produce paying crops? (7) Would you plant more than one variety? (8) Has the Japan Dream peach proven a success, this far north? (9) What other early freestone variety has proven good?—D. A. D., Indiana.

A.—(1) There is a good market for quinces. I have never seen a single town or city market that was properly supplied. (2) In the first place your quinces can be planted much closer than 20 feet. I generally recommend about 12 feet apart, which will use 302 trees to the acre—six times as many trees as you can plant in an apple orchard, and I say without hesitation that these will pay you a good profit and,

considering the fact that quinces bear extremely young, you will not have to wait long for the fruit. (3) Van Deman is probably the best quince known. This variety originated with Luther Burbank more than 25 years ago and it has been widely planted. Tree, fruit, size, quality and everything considered, I believe it best. My second choice would be Orange. (4) The insects and diseases of quinces are very similar to those of the apple and the general outline for apple spraying can be followed for the quince. There is no good fruit that you can grow successfully and profitably without proper spraying. (5) In my own experience I have found Gold,

Elberta (originated in Utah), which ripens about 10 days before Old Elberta, is also a great yellow peach and one that is largely planted and is very profitable because it ripens ahead of Elberta. If you want an early peach use Red Bird Cling to June Elberta. If a white peach is wanted use Eureka, Champion or Alton. If a variety is wanted to ripen after Elberta or J. H. Hale use Krummel October.

Q.—Would like information on hardy prunes. What varieties would succeed in northern Oklahoma?—O. B. J., Oklahoma.

A.—If you want to plant prunes I suggest that you plant the Italian prune,

me serious drawbacks to these varieties. What would you suggest?—R. E. Michigan.

A.—Michigan grows the three varieties you mention—Baldwin, Northern Spy, Wagoner—in good shape. All three are well known on the market and will bring good prices. However, we realize that the objection to each variety is well taken if you would rather not plant these. I suggest Delicious, McIntosh, Wealthy and Black Ben. Wagoner is often used because of its young bearing habit. Wealthy could be used instead of Wagoner as it bears even younger than that. It is an apple of the Jonathan type and grows splendidly in Michigan. The variety we have named you can plant with success.

A good orchard will pay you well and returns will be satisfactory, if you will use the right kind of care and I believe in your letter that you will. There never was a time when apple orchards could be planted with more assurance of profit than the present time. The production of apples is decreasing and the markets are opening for more fruit. All the leading agricultural officials advise the planting of more and more orchards—the growing of more and more fruit, for the profit of the grower and the health of the country.

Japanese Barberry Hedge

Q.—I am planning to put out a hedge this coming spring, but there are so many different varieties that it is difficult to decide which I should use. Ground is hard and well drained, black soil, and I have considered using American Arbor Vitae. I have also thought of erecting a wire fence and planting a climbing vine, Hall's honeysuckle and Dorothy Perkins rose. I have also considered covering a woven wire fence with a vine called Big Sweet. Would you recommend Rose Rosa in preference to Barberry?—W. B., Iowa.

A.—The American Arbor Vitae is a very good hedge, but is relatively a slow grower compared to other hedges, and conditions must be exactly right. The woven wire covered with honeysuckle and Dorothy Perkins rose would be attractive. Would prefer it to the Bitter Sweet. However, there is one hedge I would advise you to plant, Japanese Barberry. It is absolutely hardy, rather a fast grower, makes a dense hedge, can be sheared to any desired shape and is beautiful in all seasons. Do not confuse the Japanese Barberry with the Common Barberry (*Berberis Vulgaris*) as there is a federal quarantine against planting that variety. Pathologists say it carries the wheat rust. The Japanese Barberry is absolutely harmless in this respect and it will make you a hedge that will not only ornamental but a real protection. The Rugosa makes a rather attractive hedge, provided it is kept low. If allowed to grow high it becomes rather open underneath. I prefer the Jap Barberry.

Q.—Please tell me what you consider the best summer sweet apple?—A. R., souri.

A.—In answering this question, haven't very much latitude, and I presume if nothing but a sweet apple will do, Sweet Bough is the one you had best plant.

Q.—When I was a boy, we had in our orchard an early summer apple we called Strawberry—a small, round, red apple with a strawberry flavor. Last year I ordered a Chenango Strawberry tree and it came labeled Chenango Strawberry. Is this the same apple?—R. L., Illinois.

A.—The Chenango Strawberry is entirely distinct from the apple you describe, which is doubtless the Early Strawberry, which is also known as Red June Eating. This Early Strawberry, however, is distinct from Margaret, which is also known erroneously as Red June Eating; other synonyms of the Margaret are Early June, Striped June, Striped June Eating, etc.

The Chenango is an oblong, red apple, shaped just like the Black Gilliflower, which is the Strawberry that you are referring to. It is a small apple, roundish conic, somewhat rather flat, general appearance a bright red. Both are good apples, ripe about a month apart. However, there are other and newer sorts that are better than either. Liveland Raspberry is a better

Continued on page 22



Montmorency Cherry Orchard, Grand Traverse, Mich., Showing Fillers of Berry Plants

Early Gold (Shiro), America, Abundance, Red June and Omaha about the best plums. There are many other good varieties, but these sorts are, in my judgment, about the best on the list. (6) Plums are moderately young bearers and should give you some fruit in about three or four years. (7) As with all fruits, I would not set a solid block of plum. Would use at least two sorts. (8) I have never tested the variety you name and have never heard any very promising report of it. I am not in a position to advise. (9) J. H. Hale is proving to be a great commercial peach of the Elberta type, and a good many of the peach growers think it will finally take the place of Elberta on the market. The Early

which is one of the best sorts. There are a number of varieties of prunes but their identity is badly mixed. The true Italian prune is my choice of them all. My advice, however, is not to plant too many prunes in your country. You will find that plums of the Hybrid Japanese type, such as America, Early Gold (Shiro), Gold, etc., will be better for you.

Apples for Michigan

Q.—I am planning to plant three to five acres of apple trees. I am advised to plant Baldwin, Northern Spy and Wagoner, for commercial purposes. Bitter Pit with Baldwin, too late bearing with Northern Spy and light crop with Wagoner seem to



A Young Peach Tree in Bearing. This Tree Has Been Properly Pruned and Properly Treated and the Fruit Can Be Picked Without a Ladder



"QUICK delivery on Goodyear Pneumatic Cord Truck Tires has enabled us to get better prices for perishable fruits and vegetables. Other farmers in this section are adopting these tires as a result of our experience with them."—B. and J. D. Park, Fruit Growers, Provo, Utah.

THE fruit growers, making the statement above, have increased the profits of their 160-acre farm in the Wasatch Mountains simply by using Goodyear Pneumatic Cord Truck Tires.

adoption of the Goodyear Pneumatics has made it possible for them to deliver berries and garden stuff in strictly fresh condition to customers who live 40 miles distant, at Park City, Utah.

The bad roads between farm and town limb grades that range to a fierce 23 per cent and twist through passes 9,000 feet altitude — sometimes choked with mud or snow.

Consequently they present conditions of the kind that frequently cause solid-tired trucks to stall, due to lack of traction. And horses require three to four days to haul one load and return. Previously, very slow transport has meant that these growers could deliver quickly perishable produce only in deteriorated condition and at low prices.

But, during the 1918 picking season, either of two $\frac{3}{4}$ -ton trucks shod with Goodyear Pneumatic Cord Truck Tires made the long, severe 80-mile round trip almost daily. Fruit and vegetables gathered in the afternoon have

been sold the following morning in Park City.

Further, the truck-cushioning, ground-gripping Goodyears have been delivering mileages up to 16,000 in the gruelling service described here.

Experience like this plainly recommends the pioneering Goodyear Pneumatic Cord Truck Tires not only to fruit growers but to raisers of live stock and others whose profits depend to a considerable extent on prompt marketing.

The Goodyear Tire & Rubber Company

GOODRIDGE
AKRON

Where America's Golden Oranges Thrive

By Earle William Gage, New York

THAT America has come to be the home of the luscious golden orange is due directly to the persistent effort of the fruit men of Florida and California. The sweet orange is a native of eastern Asia and was carried thence to India and Asia Minor, and later to Portugal, thus starting its westward course. The history of modern commercial orange growing consists of a series of progressive movements ever trending westward and gathering volume, newer centers of production far outstripping the older, and ultimately largely displacing their products from the world's greatest markets.

At the time when the earlier Spanish and Portuguese explorers carried oranges to the West Indies and Florida they laid the foundation for an industry which American genius and enterprise developed in Florida until that region not only contended with the Mediterranean region for American markets, but was planning to invade northern Europe by direct shiploads, when home demands began far to exceed domestic production.

California to the Fore

Not only is Florida one of the world's leading orange-growing sections, producing in fact citrus products of various types, but, since 1895, California has come forward, and today is not only supplying four-fifths of the oranges consumed in the United States, but is selling the highest priced fruit to the London markets against world-wide competition. Competition against the California products has worked hardships for the fruit growers along the Mediterranean region because they depend upon Europe for an outlet. Italy exported \$6,000,000 worth of oranges and lemons in a year, but more recently prices have declined so greatly that the citrus plantations are being deserted for more profitable crops. The United Kingdom alone consumes close to \$20,000,000 worth of oranges per year.

The orange from the West Indies and south Florida is different from the California orange in main ripening season, and in character of the fruit. With the late ripening varieties, the California grower extends his shipping season late into the autumn and thus laps upon the early fruit from Florida and Jamaica, while the parts of California which bring earliest maturity to the fruit, are shipping before the southern fruit is cleared away. In fact, California is able to keep the markets supplied with fresh oranges in prime condition the year around, due to the numerous varieties grown there.

In the Golden State, the development of the citrus industry has begun, though pioneers planted oranges at various places over the state. The orange has waited for the natural evolution of farm life, for the passing of the stock ranch and the wheat farm, and the coming of the fruit grower in place of the rancher.

Location of Groves

It is not a question of the thrift of the trees or the ripening of good fruit. There are extensive groves at San Emigdio and El Tejon ranches and at other points. From the fine old groves at the former place to the north line of Kern county, bordering the plains for some seventy miles, is one of the largest single bodies of

citrus land in California. The general topography is favorable to citrus production. The bench-lands selected for oranges lie higher than the bottom lands, into which the cold air drains as water does into depression.

Suitable land in abundance follows a contour line which ranges from 350 to 1,200 feet above sea level, the mountain ranges forming a barrier from the fogs and winds of the ocean. This peculiar topography presents variations of temperature, insures a large aggregation of heat units, and provides for the earliest ripening of fruits—a period of from four to six weeks in advance of southern California. Exceptional years, at long intervals, injure the citrus crop of California, yet a great industry that represents an investment of from \$200,000,000 to \$300,000,000, and upon which 200,000 people depend for support, is based upon climatic conditions which have given the orange industry the reputation of being the most profitable of all farming or horticultural enterprises in the state.

product showing a superior density and thickness of texture of rind, higher sugar and high acid percentages and a more sprightly or vinous flavor. The popular conception of the superior sweetness of the oranges produced in humid countries is due, not to a greater amount of sugar in the juice, but to less amount of acid. The quality of an orange is largely inherent in the variety, but all varieties are similarly changed by growth under humid or arid conditions of climate and soil.

This fact is well illustrated by the standing of the navel orange in California. This variety has been grown for a century or more as the chief orange in Bahia, Brazil, whence it was taken to California. In Brazil it was fully demonstrated that the fruit possessed no shipping qualities, and if shipped but a short distance must not be harvested before maturing. In California and a portion of Arizona, the same variety may be picked at full maturity and successfully shipped all over the United States and to a few European markets.

Dade county, and along the west or Gulf coast the groves reach from Citrus county almost to the southern boundary of Lee county.

Although the orange industry struggled along in a helpless condition from the introduction of the first commercial orchard, it never became an established profitable fact until the formation and execution of the businesslike plans advanced by the co-operative Florida Citrus Exchange which handles the greater proportion of the highest grade fruit today.

The orange was originally introduced into Florida by the Spaniards, who imported a few sour oranges and gave some of the fruit to the Indians in exchange for valuable articles. The seeds of the fruit, being distributed from village to village and finding congenial soil and favorable climatic conditions in the hardwood forests and live oak groves where the native growth protected them from sun and radiation, grew up into seedling trees, and in due time formed wild groves of immense extent throughout the northern and central parts of peninsular Florida.

When Shipping Began

Although sweet oranges were known in Florida previous to the days of the Civil War, they were not considered of commercial importance because of the absence of transportation facilities. Commercial orange culture dates back to between 1866 and 1870, when the success of the trees along the banks of the St. John river began to attract the attention to this industry as a good investment. Inasmuch as profits were large from the first, many financial leaders were readily attracted to the orange industry, so that 1895 saw 6,000,000 boxes produced.

The Florida orange begins to ripen in late October or early November, and the shipments are made until spring, many growers of later varieties holding the fruit on the trees until summer. Shipments are usually very heavy during December, and approximately 50 per cent of the Florida crop is sent north during the holiday season, or for it. But the modern tendency is to lengthen the shipping season, so that Florida citrus fruits are today moved in large quantities until the first of April, and even later. Modern refrigeration has had much to do with this linked with advanced methods of rapid transit systems.

How Fruit is Handled

Between the tree and the final market, profits may be conserved or thrown away. No fruit is more susceptible to decay from bruising and rough handling than the orange. By the simple expedient of using cotton gloves when picking and packing, California orange growers saved 10 per cent in rot, and this is large when it is considered that it aggregates some 4,500 carloads.

In harvesting oranges it is necessary to sever the fruit from the trees by means of clippers or shears. Over the picker's shoulder is thrown a basket or bag in which the fruit is placed as clipped. These picking receptacles hold the fruit without pressure, and by opening the bottom, are emptied into the field boxes without jarring the fruit.

Continued on page 24



Within the near future, the great semi-circle of foothills will be green with orange groves. Water can be found nearly everywhere, the depth depending upon surface elevation. Insect pests are unknown in the Kern county region, while scale and smut are being excluded by the steady sunshine and dry atmosphere.

Range of Profits

Citrus profits range, in general, from \$100 to \$300 per acre. In special cases the latter figure has been greatly exceeded. Much depends upon the market, the care of the grove and the age of the trees. In a San Joaquin valley grove of about 18 acres, the trees being nine years old, the income two seasons ago was \$35,000. This orange grower, by making a science of his task, was able to make a return of nearly \$2,000 per acre. A four-acre grove in Kern county, planted in 1896, has yielded since coming into maturity from \$1,700 to \$2,000 per year.

Rain Versus Irrigation

The difference in oranges grown under humid and arid conditions presents an interesting study. In one instance the moisture is supplied by rainfall; in the other case by irrigation; the arid-region

The Washington Navel is the leading variety in California. There is a large acreage of the Valencia Late variety, also. This latter fruit is increasing in popularity. Nearly seedless, it reaches the market when the seedless navel is not to be had, ripening in May and June. Inasmuch as the Valencia Late bears more prolifically than the real navel, the profits as a rule run from \$250 to \$1,000 per acre, the average being \$300 to \$400 per acre. Ninety per cent of the orange groves are irrigated by pumping plants. Although the depth to surface water is greater in the foothills than in the valley proper, the annual cost of irrigation in the citrus belt is \$5 to \$7.50 per acre in the large groves, or up to \$12 in the smaller tracts.

Citrus Industry in Florida

In the state of Florida the citrus industry stands pre-eminently first among the agricultural and horticultural pursuits. It is a vast industry of large proportions. Approximately 9,000,000 boxes of oranges, or about 71 per cent of the citrus output of the state, are annually harvested. The industry has become widely scattered over the state, plantings today extending in a narrow fringe along the east coast, from St. John on the north to below Miami, in



\$1475
F. o. b. Racine

New *Mitchell* Sixes

Wheelbase 120 inches
Long-stroke Six motor
Cylinders $3\frac{1}{4} \times 5$. Tires 34×4

The New-Standard Six

Over 100 Betterments—50% Added Strength

The car we present now is a new model, built to new standards by new Mitchell specialists. It brings out for the first time all our new conceptions of how good a car should be.

War-time gave us our great opportunity. The great Mitchell factory was devoted to truck building. So our engineers and experts had 18 months to perfect this ideal Six.

They have added 50 per cent to the strength, 75 per cent to endurance, 25 per cent to economy and 20 per cent to beauty and comfort. Not in ten years has so great an advance been made at one step in this field.

Standards Too Low

Two years ago we concluded that all existing standards in Light Sixes were too low. The cars were too light. Most of them were too small. There was too much skimping to meet price competition.

Makers did not know requirements. What they called over-strength proved under-strength too often. Hundreds of thousands of Light Sixes in use showed to us that standards needed raising.

Mitchell Sixes had been enormously successful. We were pioneers in Sixes. Our cars had won a world-wide reputation. Some had run over 200,000 miles. But we realized then that Mitchells also could and should be vastly bettered. And we resolved to do it, regardless of all rivals.

New Specialists

We added to the Mitchell staff many new specialists. Each was a man who

had made his mark in high-grade car construction.

Then came the war, and we entered truck building. That gave these new men 18 months to design and perfect this new Mitchell.

They worked out more than 100 improvements. They spent over \$250,000.00 on new equipment for better workmanship and accurate tests. They created a staff of 135 inspectors. Part by part they revised our standards, until they had added 50 per cent to the strength and 75 per cent to endurance.

Some Major Changes

Your Mitchell dealer will show you countless improvements. But the best are shown only by tests. The gears, for instance, are made 25 per cent stronger. A new hardening process insures complete uniformity.

Rear axle strength is increased 50 per cent. Brake efficiency is increased 75 per cent. The steel frame is $1\frac{1}{2}$ inches deeper, adding 50 per cent to the strength.

The steering gear is 10 per cent stronger, and it has two ball bearings. The crank shafts show a tensile strength of 150,000 pounds per square inch.

There's a new type of disc clutch. There are 123 drop forgings. Chrome-Vanadium and Chrome-Nickel steel are used in abundance.

But our long cantilever rear springs are unchanged. They could not be improved. They have made the Mitchell the most comfortable car in its class. And not a spring has broken out of 40,000 pairs.

Less Operating Cost

Gasoline and oil consumption are reduced 25 per cent. This partly comes through perfect-fitting cylinders. It largely comes through a thermostat which regulates the water system to maintain an even heat.

We use body frame material costing twice the usual to make the bodies staunch. We use interlaced hair in the upholstery, so it stays in place. We use four coats of varnish instead of the usual two, so the finish is enduring.

Our wheelbase is 120 inches to give ample room. Compare that with other five-passenger Sixes. We employ 135 inspectors and testers to insure that every part is right.

The Lowest Price

Still this new Mitchell, with all its improvements, undersells all rivals. It remains, as always, the lowest-priced Six of its size and power and class.

This new car forms the supreme example of what factory efficiency means. We build the complete car, chassis and body, in a plant that is famed for its scientific methods. As a result, we continue to offer a value unapproached in this class.

Write us for further details. Then see this new car at your nearest Mitchell showroom. See for yourself what these new standards mean. You will find no other car this spring with so many new attractions.

Mitchell E-40

Price, \$1,475, f. o. b. Racine
Wheelbase, 120 inches
Long-stroke Six motor with Cylinders
 $3\frac{1}{4} \times 5$
Tires 34×4
3-Passenger Roadster, same price
We also make a Touring Sedan

MITCHELL MOTORS COMPANY, INC., RACINE, WISCONSIN

Mahomet and the Mountain in Kansas

By H. W. Doyle, Kansas

"IF THE mountain will not go to Mahomet, Mahomet must go to the mountain." The mountain did not go to Mahomet, it remained firmly fixed upon its foundation. Hence Mahomet has gone to the mountain. Mahomet, be it understood, in this case is the horticultural expert, and the mountain is the practical Kansas fruit grower.

For years the professors of the agricultural college, the scientists of the state experiment station, the farm press, and other agencies, choked the mails with tons and tons of literature about how to raise apples in the Sunflower State. Some of the more alert orchardists profited thereby, but the great bulk of the fruit growers assumed the attitude of their brethren across the state line to the east, the Missourians, saying, "Show me!"

Experts Show Fruit Farmers

For the experts, filled with zeal and confidence by their proved experiments and observations, there could be but one response. They proceeded with the showing. Horticultural demonstration work started in Kansas in 1910, with a few scattered visits. Today, under the extension division of the Kansas State Agricultural College, three specialists are constantly employed, and the members of the station staff help out by making numerous special trips.

Through the efforts of these men the gospel of modern, scientific fruit production, constituting the latest findings of the experimental stations all over the land, and the methods of the most progressive growers everywhere, are brought to the very door of the farmer; they are demonstrated before his very eyes, in his own orchard and with his own tools, if he desires.

The plan of the Kansas horticultural demonstration work, as outlined by Prof. Geo. O. Greene, horticulturist in charge, is as follows:

1. Orchard visits, of one day or part of a day, for consultation and advice only, undertaken on invitation from the owner. Demonstrations made along the lines of pruning or spraying, and the owner left to carry out the work or not, as he sees fit.

2. Definite orchard demonstrations, agreements made with the owner, whereby a college representative endeavors to be at the orchard at each important operation of pruning or spraying. The objects are to point out the net results of suggested pruning or spraying, to teach life histories of both insects and diseases, and the methods of control of each. This teaching is done by way of comparison with certain trees left unpruned or unsprayed, and by comparisons of cost accounts of material and labor expended.

3. Orchard tours, by automobile, planned to make comparisons between sprayed and unsprayed orchards, and pruned and unpruned orchards.

4. Packing schools, held for the instruction of growers in better methods of grading and packing fruit for the market.

Work of Kansas College

During the year ending in June, 1917, Mr. Greene and his assistants made 312 orchard visits, directed the work of 57 demonstration orchards, conducted four orchard tours, and held four packing schools, with a total attendance at these meetings of 3,960. Two hundred separate farms were visited in this work, and 500 farms are carrying out some program of pruning, spraying, or cultivation as laid down by the experts. In fact, since the mountain has learned something of the ways of Mahomet, Mahomet has not been able to travel fast enough; he has been wholly unable to answer all the calls and to fill all the demands for horticultural demonstrations.

When a grower desires to make of his plantation a demonstration orchard he applies to the college. Mr. Greene, or one of his assistants, then calls upon the owner and a contract is drawn up. The owner agrees to follow the directions of the expert, to give the expert board and lodging, to keep a careful record of his operations, and to set up a bulletin board, furnished by the college. The college agrees to furnish the expert and have him on hand whenever necessary.

When the year's work is done the owner sends in a complete report of all the details of management, methods, cost, and re-

turns. The methods generally practiced by the owner determine the line or lines along which the demonstration is conducted. Demonstrations are planned along any or all of the following lines: Rejuvenation pruning of old orchards, winter pruning, summer pruning, no pruning, spraying, cultivation, cultivation and cover crops natural and sown, and no cultivation.

Work in Old Orchards

"Although we have quite a number of promising young orchards under our direction—all pruned to the new 'story-and-a-half' type, a compromise between the old eastern central-leader and the western vase or inverted umbrella types—it is with the old orchards that we have found most of our work, and it is there that the results have been most striking," said Mr. Greene. The problems, therefore, have been largely those of pruning, spraying, and cultivation.

"On appearing in one of these old orchards, the trees veritable masses of brush and infested with every disease and insect imaginable, we find the most common error of the grower to have been that of cutting out too much big wood, and trimming up from the bottom. Growers get the idea that an open centre means to prune everything out of the center, instead of thinning the top and bringing down the branches. The thing that surprises the average man, more than anything else, is the fact that the demonstrator's pile of brush is so small.

Much to Learn in Spraying

"But by far the hardest proposition we have to deal with is the matter of spraying.

Results Secured by O. J. Brown						
Value of crop:	No. of trees	Sprayed Total value of per tree	Unsprayed No. of trees Total value of per tree			
Winesap.....	105	\$736.00	\$7.00	15	\$48.50	\$3.23
Grimes Golden.....	70	415.25	5.93	5	14.00	2.80
Missouri Pippin.....	430	966.00	2.24	22

Results on Carl Young's Orchard

Net Results or Gain Per Tree:	Cost of Care	Net Profit	Cost of Care	Net Profit
Winesap.....	\$2.98	\$6.902	\$3.23
Grimes Golden.....	0.298	5.632	2.80
Missouri Pippin.....	0.298	1.952

The general spray schedules, worked out for the state as a whole, cannot be made to fit every locality, and the average man has the haziest of notions about revising these schedules to fit the life histories of the diseases and insects inhabiting his particular locality. Consequently he seldom sprays at the proper time.

"Some growers will make the mistake of standing too close to the trees while applying the spray, and others do the work too hurriedly," continued Greene. "When a grower is able to apply from five to seven gallons of material to a 15-year-old tree in such manner that the tree is wet as with a heavy fog, without allowing the tree to drip, he can say he is fairly skilful in handling the rod. Too many workmen do not seem to realize that the material does not break before it is from two to four feet from the nozzle. This drenches the tree without properly spraying, and the poison and bordeaux mixture, both of which are held in suspension, are carried to the lower edge of the fruit, giving no protection to the upper part and burning or russetting the lower part.

"Another serious mistake has been the improper mixture of the spray materials. Many growers have not appreciated the fact that bordeaux mixture, for instance, is a delicate chemical, and that one can secure as many compounds as there are different ways of putting it together."

Individual Instances

The remarkable success of these orchard demonstrations may be illustrated by citing a few examples. Take the case of an orchard near Grantville, in Jefferson county: The growth of trees and quality of fruit had been far from satisfactory, and upon agreement with the owner the horticultural demonstrator planned the orchard work as follows: One-half to be cultivated; one row to be neither pruned nor

sprayed, and half of that row uncultivated. Part of the varieties subject to apple blotch to be sprayed three days before the time regularly scheduled for the application of the first blotch spray, and a portion to wait till two days after such time.

At the end of the year the difference between the cultivated and uncultivated portions could be seen a mile away, the foliage on the cultivated plot showing a darker green and more vigorous growth. Blotch control showed from clean fruit where the earlier applications were made, on through little fruit of value where the application was late, to no fruit worth picking on the unsprayed trees. At the field meeting (one of these is held in each orchard in the fall before the fruit is picked) one orchardist remarked: "I have read in bulletins and papers that apple blotch can be controlled, but I never before saw anything prove so conclusively that if the application of bordeaux mixture is thorough, and on time, apple blotch can be easily and completely controlled the first year."

Small Orchard Makes Profit

At Roxbury, in McPherson county, stood a 20-year-old orchard of about 40 trees. Blotch, Illinois canker, canker-worms, and codling moth had ravaged this little orchard for years, and the owner had no fruit from it at all. This owner was a "conscientious objector" to the farm bureau of his county, and the county agent was exceedingly anxious to convert him.

Finally the county agent induced the owner to offer the orchard as a demonstration. Mr. Green took hold of the prop-

onds from the sprayed trees, and no apples at all from the unsprayed trees.

The self-explanatory table on this page is the record of results at the 40-acre orchard of Carl Young, near Oxford, Sumner county.

Educational Results

Many other striking examples might be cited, but those given will serve to show that the demonstrators have demonstrated. Moreover, in practically every case where a demonstration has been put on the owner has not only continued in the straight and narrow path, but he himself has been a demonstrator. In Montgomery county, where four demonstration orchards are located, there are at least 15 farmers in the neighborhood spraying and pruning according to the directions laid down for the four.

The amount of new planting brought about by this orchard demonstration work has not been inconsiderable. At Valencie, in Shawnee county, 25 acres have been planted by a single grower, and at Columbus, in Cherokee county, 25 acres by another. In Montgomery county five men have planted 100 acres, and each visit of the demonstrator finds other men planting young orchards. In Sumner county, as the result of two years' work, something like 500 acres have been planted.

Marketing Methods Changed

Not with production alone have the demonstrators been concerned. When a crop of apples has been raised the next this is to dispose of it at a profit. The experts early interested themselves in the matter of marketing. They found that the growers of Kansas were prone to cast their eyes upon distant markets, entirely overlooking the trade in their home towns. Frequently they would work their heads off to ship to a distant point, while the apples for their local market were being supplied by every known fruit-growing region outside the state. The representatives of the college at once advocated a system of home marketing, fostering the idea of neighbors and city people going direct to the orchard for apples.

In order to follow such a system it was necessary for the farmer to enter the field of advertising, and wherever demonstration work has been carried on there has been instruction in the value of printers' ink, publicity, distinctive packing and package, bulletin boards, and every method that will call public attention to the products for sale. Post card advertising, where mailing lists could be secured, have brought good results, and some growers have been very successful with "follow up" letter systems. Dodgers with snappy stories have been quite effective in other localities.

Direct Marketing Adopted

Consider, for instance, the selling problem of Julius Smith, of Baldwin, Douglas county. Smith's had been a demonstration orchard, and he found himself with several thousand bushels of apples on hand. The buyers just wouldn't buy, at least not at what Smith thought a fair figure. He appealed to Prof. Greene for relief. "Advertise 'em," said Greene. "Tell the people what you have." Smith hied himself to the local newspaper office and bought a little space, and in that space he told the people of his intention to celebrate apple day at his orchard, inviting them all to attend. The people attended, they came in lumber wagons, in buggies, in automobiles, and they bought Smith's apples, too, every one of them.

The system of direct marketing has been so successful that some growers have built loading platforms in their orchards, for the accommodation of this class of trade. One man last year marketed his entire crop of 16,000 bushels by the method. He was able to sell his apples just as fast as he could pick them. In fact, he finished picking the last bushel of apples on October 28th at 3 p. m., and at 5 p. m., the same day, he turned away empty wagons.

It is work like this that is regenerating the fruit-growing industry of Kansas, and that will cause it to settle down to a permanent, systematic basis. Promising old orchards will be rejuvenated, and new ones will be planted. The undesirable fruit lands will be abandoned to other crops, and thousands of acres of adapted land will be devoted to suitable varieties, properly planted, and well cared for.

Twice The Work-Half The Expense



MOLINE UNIVERSAL TRACTOR

"One man and a Moline-Universal Tractor will do about the same work (taking a season through) as two men with four horse teams."—Crumbaugh Bros., Vandalia, Illinois.

Statements such as this from Moline-Universal owners—and we have many of them—support our claim that the Moline-Universal enables one man to do twice as much work at about half the expense as is possible with horses.

With a Moline-Universal you can plow 9 acres a day, double disc 27 acres, drill 35 acres, cultivate 15 to 20 acres, mow 25 to 35 acres, and harvest 30 to 35 acres. Figure out for yourself how long this would take you with horses. Then keep in mind that in case of necessity you can work night as well as day, because the Moline-Universal has complete electrical equipment, including electric lights and self-starter.

As for expense it runs about half what the same work with horses would cost.

Charles J. Deck of McArthur, N.D., says: "I plowed 60 acres—fuel amounted to \$32.94.

It would have cost me \$82.40 to plow this with 6 horses, not figuring feed for Sunday, or rainy days. I did not have to get up at 5 o'clock every morning either." Mr. Deck did not consider the saving of his own time.

"If I hadn't had the Moline-Universal I would have kept 4 more horses, which are a bigger expense than the tractor," says J. E. Carey of Wilmington, Ohio.

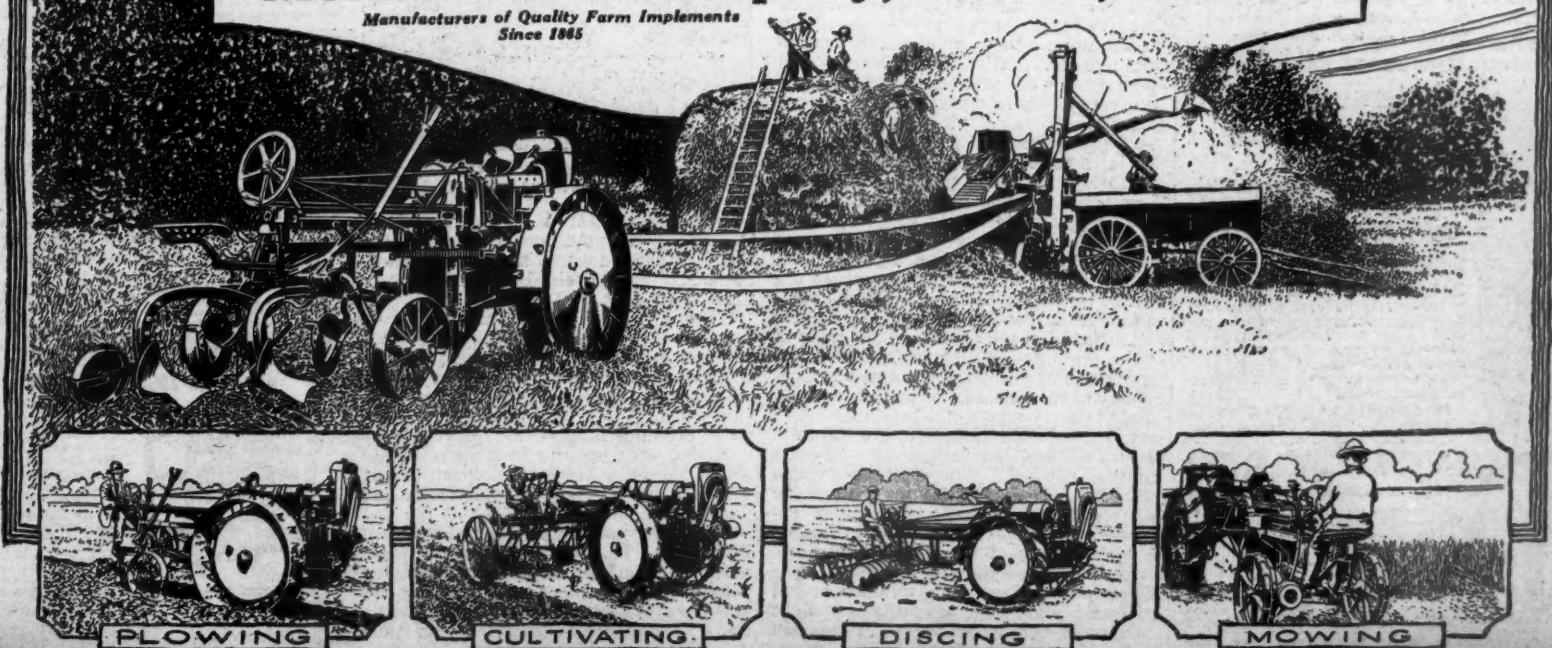
Many other statements similar to this prove that the cost of operating a Moline-Universal Tractor is no greater than maintaining three or four horses, while it will do twice as much work. Then there is another big advantage—belt work. The Moline-Universal has enough power for all ordinary belt power requirements.

"I purchased a 20 x 36 separator and then threshed my grain, pulling it with the Moline Model D. The tractor handled the separator very easily and did fine work. After I had threshed my own grain, I threshed for four of my neighbors, about 350 acres in all."—G. C. Appenzeller, Bouton, Iowa.

Considered from every angle the Moline-Universal is the best tractor for you. It does all farm work including cultivating. One man operates both tractor and implement from the seat of the implement. It will make you money. See your Moline dealer now or write us for full information. Address Dept. 62

Moline Plow Company, Moline, Illinois

Manufacturers of Quality Farm Implements
Since 1865





Built to U.S. Standard

THE U. S. standard specifications of 2,150 cubic inch capacity is built in every Bushel Shipping Basket.

To the consumer—this assures honest weight; encourages buying; promotes confidence.

The Universal Package Bushel Shipping Basket

Is reinforced by a center post which permits safe packing even in piles of eight or ten.

Easy to handle—easy to pack—easy to ship—it costs no more yet lasts longer.

SAMPLE BASKET—sent to users of over 300 baskets a year.

MONTHLY BULLETIN—of interest to growers and packers sent free.

Send Name and Address

Package Sales Corp.
104 E. Jefferson Street
South Bend, Ind.



Baskets for Apples, Peaches, Plums, Grapes, Tomatoes, Cucumbers, Beans, etc. Boxes and Crates for Berries, Cucumbers, Celery, Cauliflower, and vegetables of all kinds.

Catalogue mailed on request
The Pierce-Williams Co. South Haven, Mich. Jonesboro, Ark.

Masters Plant Setter Pays for Itself Every Day Used

Transplants Tobacco, Tomatoes, Sweet Potatoes, Cabbage, Strawberries, Eggplant and all similar plants.

No Stooping—No Lame Back
Each plant set, watered and covered—
one operation. A full stand; no re-setting, an earlier crop. Most practical planter ever invented. It guarantees to set three times as fast and easier and better than hand work. Money back if not satisfied. Write for Booklet.

MASTERS PLANTER CO.
Dept. 20. Chicago, Ill.

DINGEE ROSES
Sturdy as Oaks

Dingee roses are always grown on their own roots—and are absolutely the best for the amateur planter. Send today for our "New Catalogue of Roses Catalogue for 1916." It isn't to catalog—it's a practical work on rose-growing. Profusely illustrated. Offers 300 varieties. Roses, other plants, bulbs and seeds, and tells how to grow them. Sale does every guarantee. List 1899. 70 Greenhouses.

THE DINGEE & CONARD CO. Box 252, West Grove, Pa.

Kindly Mention American Fruit Grower when writing to Advertisers

More Facts on Apple Pomace

By Edith L. Ragsdale, Illinois

UP TO the time my article, "Apple Pomace—Its Uses," appeared in the December AMERICAN FRUIT GROWER I had no idea I was touching upon a subject of such widespread and general interest. It was quite by accident that I wrote and sent in the story. However, since the appearance of the article and the many letters I have received relative to the industry I am beginning to feel that I have started a real, live topic.

At the request of Mr. Adams, of the AMERICAN FRUIT GROWER, I have delved into the subject and in this article will endeavor to make as many points as possible clear to the men engaged in the manufacture of apple pomace.

Realizing that this subject calls for actual facts I have spent the past several

times as it is possible to design, turning out a uniform, light colored, dried pomace at all times.

"Our apparatus is of the rotary steam dryer type, operating under sixty to seventy pounds of steam pressure and using a properly designed and regulated exhaust fan to carry away the vapors from the drying pomace. The entire process is absolutely mechanical, no human hands coming in contact with the pomace from the time it leaves the cider press until it is delivered to the storage bin as a finished, dry article, ready for the market.

"Our pomace is always of the same uniform, high quality, and we, therefore, have a ready sale to the jelly manufacturers.

"The cost of the complete drying equipment varies, depending entirely upon the capacity desired. Our company designs and sells such equipment, but we always insist on getting all necessary data from the cider mills so that we know exactly what is required in each particular case. We have installed drying plants ranging from \$8,000 to \$25,000 in cost. On account of the varying conditions at the different cider mills, we have never issued catalogues or pamphlets describing a standard apparatus.

"If you care to do so, we will permit you to take a photographer to our Centralia plant at any time to take such pictures or photographs as you wish to have for your next article. Our Mr. Conlie, who is watching at the plant at all times, will explain to you how the pomace travels from the time it leaves the press until it is perfectly dried.

"Any additional information which you may desire will be chercfully furnished. "Yours truly, MID-WEST PRODUCTS CO., (Signed W. A. Peterman,) Milwaukee, Wis."

To answer the many inquiries which have been sent in as to who purchased the dried product, I wrote the editor of The Canner, a magazine devoted to the interests of the canners and preservers everywhere. Appended is a copy of the answer just received:

"Chicago, Ill., Dec. 30, 1918.
"EDITH L. RAGSDALE, Centralia, Ill.

"DEAR MRS. RAGSDALE—Answering your inquiry of the 20th inst., I think it will hardly be necessary to give you the names of any users of apple pomace, because practically everybody in the jelly and preserving business uses it. Just any jelly maker you communicate with will almost certainly be a user of apple pomace.

"Yours very truly,
"J. J. MULLIGAN, Editor."

Thus, to a certain degree, being familiar with the management of the Mid-West Co., and feeling that I was justified in introducing the concern to the fruit growers of America, I wrote the manager at the home office, Milwaukee, relative to the industry, the price of their machines, etc., and, feeling that their letter will be of interest to every one contemplating the utilization of pomace, I am including a copy of it in this article.

Under date of Dec. 27, 1918, Mr. W. A. Peterman, Manager of the Mid-West Products Co., says:

"We are in receipt of your letter of the 19th inst., and have noted its contents with interest, and we will endeavor to give you all possible data in regard to the methods and equipment used in properly drying apple pomace.

"Although pomace has been dried and used for commercial purposes since about 1913, it is only during the past few seasons that the drying of this product has been carried on a large scale, and in a scientific manner. Jelly manufacturers and preservers, who first used dried apple pomace, quickly recognized its advantages over apple "waste," which has been used in the manufacture of jelly since the latter was introduced as a commercial product.

"Various grades of pomace are put on the market, ranging from a dark colored, inferior quality, to a light colored and superior article. Users of apple pomace insist upon a high grade, light colored product, and do not care to purchase the inferior quality, which is made from apples of poor grade, possibly containing some rot.

"Next in importance to a good grade of apples is a properly designed and arranged drying equipment. Various types of machinery have been designed for this purpose, most of them being complete failures. As a general rule, most installations require too much coal and labor, and do not turn out a uniform product. Our company, which has been building drying apparatuses for many different purposes since 1890, designed a dryer in the fall of 1916 for the special purpose of drying apple pomace.

Owing to the many grades and the peculiar make-up of the wet pulp, we encountered unforeseen difficulties, necessitating slight changes in our apparatus, until this fall we have as nearly perfect a drying appara-



Dehydrating Machine of the A. Hailey & Co.'s Plant Located at Ashley, Ill.

From these letters it will be seen that the drying of apple pomace is a reality, that it is being done all the time and that there is a most decided demand for the finished product.

Since writing the above article I have received a letter from A. Hailey & Co., located at Ashley, Ill. They inform me that they, too, are actively interested in the manufacture of drying machines and also engaged in the drying of the pulp. That their machine is of the "dehydrating" type and very superior to most machines placed upon the market, inasmuch that it will perfectly dry all kinds of fruits and vegetables.

They refer me to the H. J. Heinz Co., of Pittsburgh, Pa., for whom their plant reduced a carload of apples into cider, dehydrating the pomace and giving the above mentioned concern perfect satisfaction. The photos enclosed are of their dehydrating machine.

**\$7.50 After 30 Days
Free Trial**

The Belgian Melotte Separator—with the wonderful Belgian Melotte Separator is yours.

30 days' free trial—then, if satisfied, only \$7.50 and a few easy payments—AND—the wonderful Belgian Melotte Separator is yours.

No Money Down!
Catalog tells all—write.

Caution! U. S. Bul-
bowl vibrates when the bowl causes cream waste! The Melotte bowl is self-balancing. It cannot vibrate. Can't cause currents in cream. Can't remix cream with milk. The Melotte has won \$40 International Prize!

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Runs so easily,
bowl spins 22 minutes after you stop cranking unless you apply brake. No other separator needs a brace. Bowl changes in seconds.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

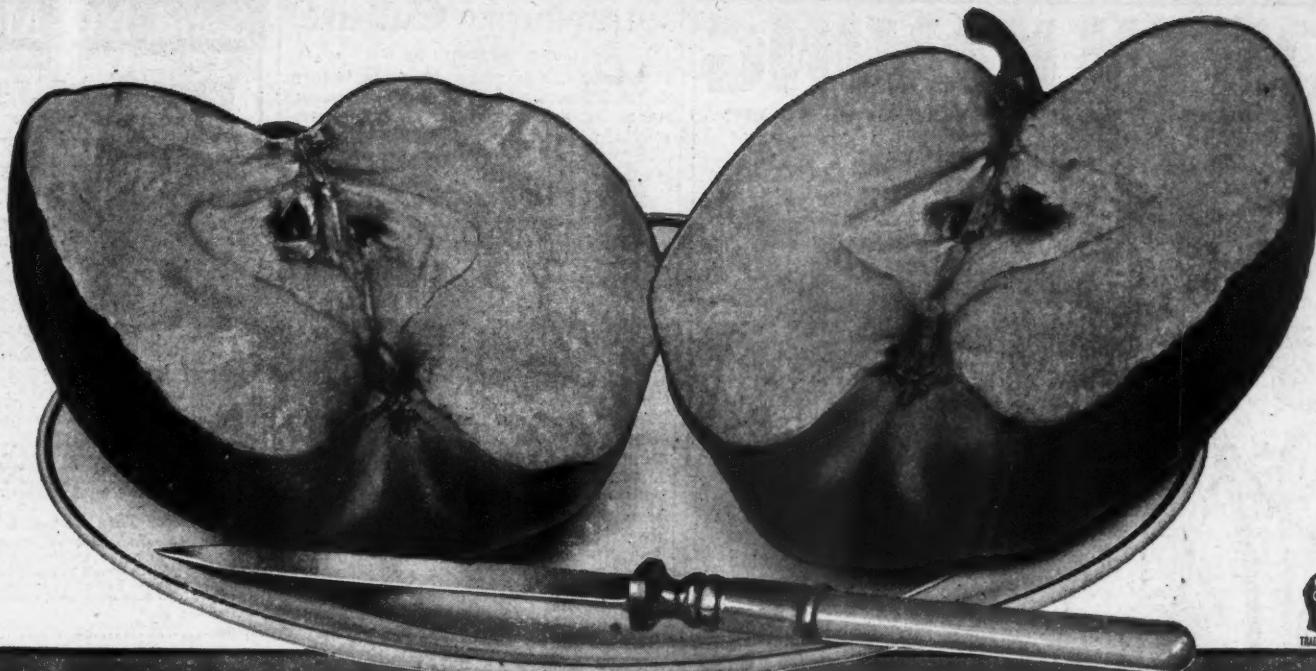
Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE!
"Profitable Dairying," a practical, commonsense text book that every dairymen should have in his library, by G. E. Hailey, tells all about feeding and caring for dairy cattle—how to make more milk. Price—\$1.00—delivered with book.

Books FREE

After
0 Days
rial

easily,
a of em-
you stop
unless you
ake. No
operator
ake. Bowl
is per-
S. Mgr.
age, Ill.



STARK TREES
BEAR
TRADE MARK REG. U. S. PAT. OFF.

"The Finest Apple In All the World"

"STARK Delicious trees from your nurseries have been growing on my place for years and have *never failed to produce a crop.*

"As they grow older they bear *more, larger, better fruit.*

"Many apples have rather a spicy fragrance and flavor—but *none* has such a delicious combination as Stark Delicious! Stark Delicious is a gem—the *finest apple in all the world.*"

—Luther Burbank

The "Wizard of Horticulture" said this about the apple tree that Stark Bro's discovered for the world of fruit lovers and fruit growers.



A Stark Delicious Tree—only four years old. The pride of the home lot and commercial orchard everywhere.

STARK DELICIOUS

STARK BRO'S Most Famous Fruit Discovery

Every home—every market accords it first place. "The Money Maker of the Orchard." \$3.50 to \$5.00 per bushel are paid every day for this apple. Thousands of people plant Stark Delicious and other Stark Apple, Peach, Pear, Plum, Cherry and Berry Trees, Bushes and Vines, for both home and market fruit—and grow corn and vegetable crops between tree rows. Make your spare land grow

double crops—yield double profits also.

Wonderfully hardy, thrifty, quick growers and young, heavy and annual bearers everywhere. Regarding their hardiness, for instance, Harold Simmons, Minnesota horticulturist, declares: "This season in Minnesota showed the superior quality of Stark Delicious Apple and your trees' big bearing ability, as last winter proved its hardiness. It stood 50° below zero without injury and bore a good crop."

Stark Trees Make \$60.00 Land Worth \$600.00



STARK BRO'S
NURSERIES
Box 340
LOUISIANA, MO.

Send me your 1919
Planting Guide at once.
 If you also want our
Free Book, "Secrets
of Ornamental Planting,
and information about Free
Landscape Plans—check in
square to left.

Write for FREE 1919 Planting Guide

Send the Coupon This helpful book—Stark Bro's 1919 Planting Guide has packed within its pages the century and more knowledge of orcharding success—inside pointers on how to select and plant 1 or 1000 trees that will do best in your climate and bring you biggest crops of finest, highest market-priced fruit. It's FREE. Get a copy! Just fill out coupon or send your name and address on postcard to us NOW.

ADDRESS BOX 340

This Young
"Stark
Brother"
Recommends
Them, Too!

He started eating
them at 8 months
old. You can see
that they agreed
with him. Better
grow your own fruit
for your kiddies,
too, don't
you think?

Stark Bro's Nurseries

The Only Stark Nursery in Existence
Always at LOUISIANA, MO. Since 1816

WORTH HAVING



F.E. MYERS & BRO. NO. 150 ORANGE ST.
ASHLAND, OHIO.



Better Seed Beds —Bigger Yields

Make the most of high-priced seed and fertilizers. Put them into perfect seed beds made as smooth as a flower bed with an

"Acme"

Pulverizing Harrow

"The Coulters Do the Work." They slice their way through sod and trash. They fill air spaces and compact the furrow slices. They pulverize and level the surface soil.

The "Acme" Harrow is light in draft—easy on the team, and you ride. Sizes: 1-horse to 4-horse; the larger sizes are just right for the tractor. Ask your dealer to show you the "Acme." Write us today for prices and new catalog. Be sure also to ask about our new "Acme" Disc Harrow.

DUANE H. NASH Inc.
131 Elm Street

Millington N. J.

"Acme" Standard No. 23—Two-horse Harrow

This model has 12 coulters and cuts 6 1/2 ft.
No. 26 has 16 coulters and cuts 8 1/2 ft.



STAHL
Protect your trees, vines and plants
by spraying in time. Stahl's "How,
When and Why of Spraying" illustrates

and describes outfits for every need. It's FREE. Write at once for FREE 10-DAY TRIAL OFFER and Special Introductory Offer. Address WM. STAHL SPRAYER CO., Box 54, Quincy, Illinois.

SPRAYERS

Strawberry Culture

Continued from page 6

a vigorous new growth. New plants form on the runners which become the bearing plants for the next year. For the commercial grower, especially, this is a most effective and cheap method because little or none of the work is done by hand.

Cost of Production

As to the cost of production for the city man in his home garden, it should be computed as total profit. By that is meant that the exercise and resulting health and satisfaction in seeing the plants grow is worth all it costs in time and energy. On the other hand, the man who makes a living by growing fruit must consider cost of production to see if growing strawberries pays him enough to be worth while. Many things enter in to change this cost of production, such as kind and fertility of soil, size of plantation and price of land. The local grower may profitably grow from one to ten acres while a grower who ships to a distant market may be able to grow twenty, fifty or a hundred acres. From his observations, the writer believes that growers plant too many rather than too few acres.

With strawberries especially, it is much better to make a profit of twenty-five or fifty dollars above expenses on one acre than to come out a little behind on three acres. The large yields of the country are generally from small plantations.

To get some idea of what the cost of producing an acre is, item by item, we will give the estimate of Charles B. Welch, a Michigan grower, made some years ago.

Rent of land	\$ 7.00
Taxes	1.80
Plowing	2.00
Harrowing	1.00
Marking	.15
Setting, four days	6.00
Plants, and digging	1.50
Cultivating 7 times	3.00
Hoeing, cutting blossoms and runners	8.00
500 pounds of fertilizer	6.00
Sowing one bushel oats	1.20
200 16-qt. crates	24.00
Picking	40.00
Packing and hauling	10.00

\$111.65

In the above, one important item for Michigan is omitted, and that is the mulch and the cost of spreading. The cost of labor and materials have also increased since this estimate was made. The yield from the acre was 200 16-quart crates at the cost of fifty-six cents each.

The cost for the second year would look something like this:

Rent of land	\$ 7.00
Taxes	1.80
Mowing	1.00
Rejuvenating	2.50
Cultivating 6 times	3.00
Mulch	4.00
Applying mulch	3.00
Removing mulch	1.50
100 16-qt. crates	12.00
Picking	25.00
Packing and hauling	7.00

\$67.80

Yields and Profits

As yields of strawberries vary so much from year to year and among growers, no attempt will be made to give even an average. Census statistics are not altogether reliable but they at least give approximations. The following are the yields, in quarts per acre, from the census returns of 1909:

Michigan	1,766
Illinois	1,484
Arkansas	1,122
Missouri	1,676
Oregon	1,809
California	3,423
New York	2,499
Massachusetts	2,730
Maryland	1,652
Delaware	1,771
North Carolina	1,903
Virginia	1,624
Tennessee	1,147
Louisiana	1,794
Florida	1,774
British Columbia	1,700

Individual yields and profits in growing are often given that read like the Arabian Night stories. The man who takes up fruit growing or any other phase of agriculture, must not be carried away by the reports of exceptional yields.

Such yields, however, do point out what is now and then possible to accomplish, and give growers an ideal toward which to strive. The writer always aims to grow 8,000 quarts to the acre, but as a matter of fact he has never yet accomplished this on a commercial basis.

Send NO Money!

You will be delighted with the comfort and astonishment at the economy of these splendid shoes. That is why we send them on approval. No money in advance. The shoes money and will convince you, otherwise you will not be out one penny.

Try a pair at our risk.

Genuine

U. S. Army

Munson Last

Same as worn by our boys

in France when they licked the Hun.

ONLY
\$3.55
ON ARRIVAL
Send NO Money

Worn everywhere now because they're blessed comfort and built full of solid wear. Two full sole leather soles—double the wear of ordinary shoes. Broad, low double sole heel—helps to prevent slipping. Excellent quality leather—durable, soft and pliable. Easy as velvet to stand mud, water and rough wear. This smashing value direct to you from the shoe market of the world at the lowest price ever quoted for U. S. Army Last Shoes, only \$3.55, postage free. We can't say how soon these will be all sold out at this price, so don't wait!

Mail This Coupon, Now!

Boston Mail Order House, Dept. G
Essex P. O. Building, Boston, Mass.
Send my pair ARMY SHOES postpaid. I will pay only \$3.55 on arrival. Since I am buying these on approval, my money back double-quick if I want it. I risk nothing.

Name.....Size.....

Address.....



IRONCLAD KHAKI

(Twill Cloth)

Uncle Sam's Boys and Girls both wear garments of

IRONCLAD KHAKI

the patriotic economy cloth. It's fast color—can't fade and wears like leather. Be sure the Ironclad "army" label and Guarantee Bond are sewed in every khaki work shirt, pants and overalls you buy.

Garments on sale by dealers—everywhere.

Write for free samples of Ironclad Khaki Cloth and Miss Ironclad Cloth to

FRANKLIN MANUFACTURING CO.
Manufacturers of Cloth Only
101 Market Place :: Baltimore, Md.

When It's Blossom Time for Apples

Use broadcast 200 lbs. Nitrate of Soda per acre this Spring at or soon after Blossom Time.

Nitrate of Soda is all immediately available. It takes Nitrate of Soda for Apple Results.

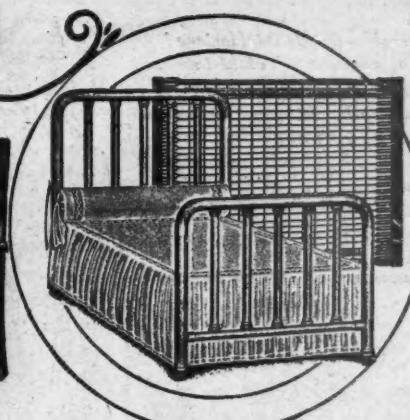
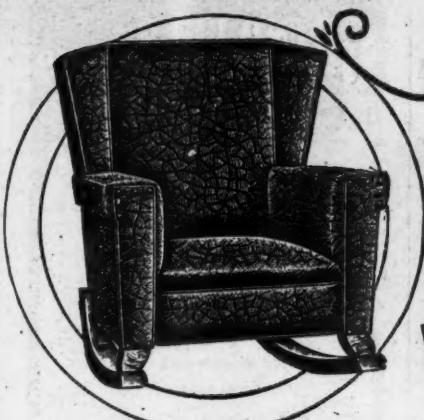
Send Post Card Today
for Fruit Books—Free

WM. S. MYERS

Chinese Nitrate Committee

25 Madison Ave. :: New York





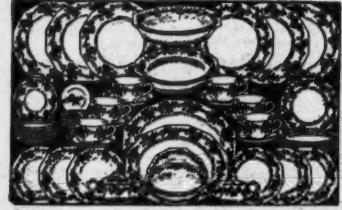
**Full Spring Construction
RICHLY
Upholstered
Rocker
Pay Nothing Until 60 Days**

Another wonderful Hartman bargain. You will be amazed when you compare this superb rocker with others at higher prices and see what a value it is. We ourselves couldn't offer it at our price if we had not been in a position to take an immense quantity from the makers. Sent on approval. Put this wonderful Rocker in your home for 30 days' free trial and see for yourself its beauty and comfort. Sturdy frame finished in handsome imitation mahogany highly glazed. Seat has six heavy steel coil springs, fastened to frame and protected by steel channel bars. Back has four steel springs securely anchored. Upholstered in imitation Spanish brown leather. A chair you will be proud to own. Height about 37 in. Width 31 in. Seat from floor 17 in. Back from seat 27 in. Between arms 21 in. Seat 21x20 in. Arms 6x23 in. Shipping weight about 70 lbs.

Order by No. 94AMA6. Price \$11.75. Pay nothing until 60 days. Then only \$2.00. Balance \$1.95 every 60 days.

51-Piece Dinner Set

Gold Rose Border Design



Pie Plates, 6-5/8-in. Soup Plates, 6 Cups, 6 Saucers, 6 Individual Butters, 1-10/16-in. Meat Platter, 1-13/16-in. Meat Platter, 1 Sugar Bowl and cover (2 pieces), Creamer, 1-7/16-in. Salad Bowl, 2-1/4-in. Round Vegetable Dish, 3-1/2-in. Oval Vegetable Dish, 1-9/16-in. Round Fruit Bowl. We guarantee safe delivery, carefully packed. Shipped from our Chicago Warehouse. Shipping weight about 40 lbs.

Order by No. 325AMA12. Price \$10.88. Pay nothing until 60 days. Then only \$1.83. Balance \$1.81 every 60 days.

King George Period

Pattern derived from the heavy gold treatment of King George period. Rich in appearance. Materials are very durable, highly glazed and fired; decoration being placed on each piece before the final glazing is executed. Correct number of pieces to constitute a complete service for 6 persons. There are 51 pieces in all, consisting of 5-1/4-in. Dinner Plates, 6-7/8-in. 6-5/8-in. Fruit Dishes, 6 Individual Butters, 1-10/16-in. Meat Platter, 1 Sugar Bowl and cover (2 pieces), Creamer, 1-7/16-in. Salad Bowl, 2-1/4-in. Round Vegetable Dish, 3-1/2-in. Oval Vegetable Dish, 1-9/16-in. Round Fruit Bowl. We guarantee safe delivery, carefully packed. Shipped from our Chicago Warehouse. Shipping weight about 40 lbs.

Order by No. 325AMA12. Price \$10.88. Pay nothing until 60 days. Then only \$1.83. Balance \$1.81 every 60 days.

42-Piece Aluminum Set

Sanitary, light, very serviceable. This 42-piece "Longware" Aluminum Set consists of: 9 piece combination double roaster with 2 outer shells, inside padding pan, 5 custard cups with perforated pan holder. Two outer shells make an excellent roaster for chicken, steaks and other meats. Includes small pudding pan; it is a combination cooker and steamer. The 3 pans also used separately over fire as a cake pan, baking dish, pudding pan or for any purpose where open pan is used; 7-cup coffee percolator with insert (2 pieces); 6-qt. preserving kettle; 2 bread pans; 2 pie plates; 1-qt. and 2-qt. lipped sauce pan; 1-1/2-qt. 2 jelly cake pans, with loose bottoms, (4 pieces); 1 casserole set; salt and pepper shakers; toothpick holder and frame, (4 pieces); 1 measuring cup; 1 combination funnel (6 pieces); 3 measuring spoons; 1 strainer; 1 sugar shaker; 1 grater; 1 cake turner, lemon juice extractor. Shipping weight, packed in special carton, about 10 lbs. Shipped from Chicago warehouse.

Order by No. 415AMA15. Price complete set of 42 pieces, \$11.88. Pay only \$1.99 in 60 days. Balance \$1.95 every 60 days.

Complete 7-Piece Set

World's Greatest Furniture Offer. Artistically made 7-piece Mission set of seasoned solid oak—rich brown mission finish—smoothly waxed. 2 large rockers, 1 with arms; 2 large chairs, 1 with arms; table, tabourette and book ends. Ornamented with rich cut out design. Seats upholstered in imitation Spanish brown leather well padded and strong. Most comfortable, lasting and beautiful. Large arm chair and large rocker stand 38 in. high over all, and 25 1/4 in. wide; seats 19 1/2x18 in. Arms of quarter-sawed oak. Smaller rocker and chair have seat 17x16 in. Table 24x36 in. Tabourette 17 in. high, has octagon shaped top 12 in. wide. Book ends just the right size to easily support large books. Each piece full size. Set will furnish sitting room, parlor or library. Without question the greatest furniture offer made. Shipped from our Chicago warehouse or factory in western New York State. Shipping wt., carefully crated, about 200 lbs.

Order by No. 110AMA9. Price \$24.65. Pay nothing until 60 days. Then only \$4.15. Balance \$4.10 every 60 days.

IMPORTANT

Note—This great set comes with 6 chairs ready to put into your room, and sectional table which you set up in 5 minutes. Don't compare this with the sets you have seen which come in 65 or 70 pieces to put together. If you buy this Hartman set—no chance of getting shaky furniture because this set is built on one-piece block construction. See if anyone else will guarantee this set to be built as this at anywhere near our price. We will not sell this set for less than \$24.65 and ask you to do a lot of work on it. Get this set that's complete ready to use—solid, reliable.

**Full Size 3-Unit Complete
Vernis Martin Bed
Pay Nothing Until 60 Days**

Refined design—sanitary and sturdy. 3-unit construction. Special corner device on spring which gives utmost rigidity and perfect alignment. Oval side tubes, stronger than round, are another feature. Spring has 6-in. rise and 1 1/2-in. band edge. A light weight high quality handsome, cold rolled burnished steel bed complete. The steel surface is bright, smooth and highly polished. Handsomely finished in Vernis Martin (gold bronze). Head end measures 49 in. high; foot 22 in. Full size bed 4 ft. 6 in. wide. Lighter than iron. 1 1/2-in. continuous pillars. Bottom tube and fillers 1 1/2-in. Shipping weight 75 lbs.

Order by No. 155AMA3. Price \$14.75. Pay nothing until 60 days. Then only \$2.45. Balance \$2.45 every 60 days.

**Walnut
Satin**

**Kitchen
Cabinet**

Send for this fine Kitchen Cabinet and use it 30 days at our risk. Then if you decide not to keep it, send it back. We will pay charges both ways. If you keep it, pay a little every 60 days. Built of satin walnut with beautiful brown effect. Wood knobs and handles. Large china cupboard with gridded wood doors, which have crystal glass panels. 3 utility drawers. Large sliding sugar bin. Ample working space. Base top 22x42 in. Extensible bread board. 2 cutlery drawers. 2 sliding flour bins, each 50 lbs. capacity. Sturdy construction in every part. Made to last for years. Shipped from factory in Central Indiana. Shipping weight about 175 lbs.

Order by No. 475AMA7. Price \$14.85. Pay nothing until 60 days. Then only \$2.50. Balance \$2.47 every 60 days.



**Pay Nothing Until
60 Days**

**Pay Nothing
Until 60 Days**

**A Whole Year
to Pay**

Not a penny now. Pick out what you want from the items on this page and send only the coupon. When the article comes, use it 30 days on absolutely free trial. If not all you expect and an amazing bargain, ship it back and we pay freight both ways—the trial costs you nothing. If you keep it, make first small payment 60 days after arrival—take a whole year to pay on the Hartman easy payment plan. This is the logical, sensible way to furnish your home and equip your farm. Deal with a house that trusts you and has a capital of \$12,000,000 to back every offer it makes. Just send the coupon—no money.

**Bargain Catalog
FREE!**

which shows thousands of wonderful offerings for the home and farm. 76 bargains in Rockers, 11 bargains in Parlor Suites, 28 bargains in Davenports, 71 bargains in Dressers and Chiffoniers, 22 bargains in Metal Beds, 17 bargains in Dining Tables. Then bargain after bargain, thousands of them, in rugs, curtains, furniture of all kinds; stoves, ranges, dishes, silverware, jewelry, clocks, washing machines, sewing machines, kitchenware—the greatest offerings ever made. Gas engines and cream separators, grinding mills, tool grinders, feed grinders, corn shellers, saws, saw frames, concrete mixers, farm carts, cider mills, sprayers, hog oilers, cultivators, general farm machinery, etc. Get this great Bargain Book. Hundreds of pages in actual colors. Postcard brings it FREE, prepaid.

Free Book filled with just the facts on the farm and remarkable testimony from 600 farmers everywhere. Full information on bargain prices and easy terms. Post card brings both books free.

**Majestic
Separators**

Accept our 30 days' free trial offer on the Majestic Cream Separator and see for yourself how it adds to your dairy profits. Easiest running, closest skimming. You will see it when you try it. Keep it only if the best separator you ever used. Thousands of farmers testify for it. 4 sizes, 375 lbs., 500 lbs., 750 lbs., 1000 lbs. No money down.

Free Books Catalog quoting record breaking prices, easiest terms ever made and book of 50 testimonies that the separator does it. Post card brings book free.

**Pay
Nothing
Until
60
Days**

**THE HARTMAN CO. 4015 LaSalle St.
Dept. 1722 Chicago**

Send me merchandise marked X, it being understood that I am to have the use of it for 30 days and if for any reason I do not want to keep it, I can return it at the end of that time and you will pay freight both ways. If I keep it, I am to make first payment 60 days after arrival. Balance in five equal amounts every 60 days.

Vernis Martin Bed No. 155AMA3 Upholstered Rocker No. 94AMA6 51-Piece Dinner Set No. 325AMA12 Aluminum Set No. 415AMA16
 Kitchen Cabinet No. 475AMA7 7-Piece Library Set No. 110AMA9 Information About Majestic Engines Information About Majestic Separators

Name _____

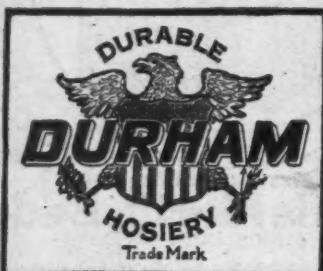
Address _____

Nearest Shipping Point _____

Send me Hartman's Bargain Book FREE (If you don't send this coupon, a post card will do)

**THE HARTMAN CO. 4015 LaSalle Street
Dept. 1722 Chicago**

Durable-DURHAM Hosiery is not a product of child labor. No person under 14 years is employed. Average working day is 8 hours and 15 minutes. Industrial conditions under supervision of experts trained in U. S. Government courses on employment management.



One of the many fine values in Durable-DURHAM Hosiery.

You can see that this hosiery is strongly reinforced at points of hardest wear

It is well worth while to know hosiery; to know what brand to buy in order to save money and avoid damage.

Ask your dealer to show you Durable-DURHAM Hosiery. Examine it and you can see the extra reinforcing that means extra wear. You can feel the fine quality of the yarn and notice the careful finish and splendid appearance of the stockings.

DURABLE DURHAM HOSIERY

FOR MEN, WOMEN AND CHILDREN

Made Strongest Where the Wear is Hardest

The tops are amply wide and elastic; legs are full length; sizes are accurately marked; soles and toes are smooth, seamless and even. The Durham dyes prevent fading after wearing or washing. There are styles of Durable-DURHAM Hosiery for every season of the year, for work, dress, play or school.

For coldest weather Durable-DURHAM Fleecy-lined Hosiery is full of warmth and full of wear.

Fleecy-lined stockings and socks for women, children and men, strong and good-looking, with soft, warm fleecing.

You should be able to buy Durable-DURHAM Hosiery at any dealer's. If you do not find it, write to our Sales Office at 88 Leonard Street, New York, and we will see that you are supplied. Free Catalog showing all styles mailed on request.

DURHAM HOSIERY MILLS, Durham, N. C.

88 Leonard Street, New York



BANNER

All year wearing stocking. Medium weight. Soft combed yarn, like finish. Wide elastic tops. Strongly reinforced heels and toes. Black and white.

Planet Jr. users get the biggest crops

They do their cultivation quicker, better and with less labor, for Planet Jrs. are scientific garden tools that work easily, rapidly and with thoroughness. Used by successful farmers and gardeners for over forty-five years. Planet Jrs. last a lifetime and are fully guaranteed.

No. 25 Planet Jr. Combined Hill and Drill Seeder, Double and Single Wheel-Hoe, Cultivator and Plow sows all garden seeds from the smallest up to peas and beans, in hills or in drills, rolls down and marks next row at one passage, and enables you to cultivate up to two acres a day all through the season. A double and single wheel-hoe in one. Straddles crops till 20 inches high, then works between them. A splendid combination for the family garden, onion grower, or large gardener.

No. 17 Planet Jr. is the highest type of single-wheel hoe made. It is a hand-machine whose light durable construction enables a man, woman, or boy to cultivate the garden in the easiest, quickest and best way.

S. L. ALLEN & CO. Inc.
Box 1107C
Philadelphia

New 72-pg. Catalog, free!

Illustrates Planet Jrs. in action and describes over 55 tools, including Cultivators, Wheel-Hoe, Horse-Hoe, Harrow, Orchard, Beet- and Potato-Wheel, Riding Cultivators. Write for it today!

RHODES DOUBLE CUT PRUNING SHEAR

Patented

RHODES MFG. CO.,
5328. DIVISION AVE., GRAND RAPIDS, MICH.

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

Orchard Problems and Their Solution

Continued from page 12

sort than Early Strawberry, while Wilson Red June is superior to Chenango. These two cover their season perfectly.

Plant Standard Trees

Q.—Do you recommend dwarf apple trees for small grounds?—T. B., Illinois.

A.—My advice would be to plant more standard apple trees. I would rather grow a standard, and keep it cut back severely, than try to produce fruit on dwarf apple trees. There is, however, quite a difference in dwarf trees. They are grown in the nursery in two ways—budded or grafted on either Paradise or Doucinc stock. Those grown on Paradise make very small trees—in fact, toy trees. Those grown on Doucinc make larger trees, about midway between the Dwarf and the standard. Unless your ground are very, very small, plant standard trees. They will give you so much better results, so much more satisfaction. If you have room for only one tree you can top-work several varieties on the same tree.

Best Filler Varieties

An AMERICAN FRUIT GROWER reader from Illinois, writing me a short time ago, asks, among other things, what varieties of apples I recommend for use as fillers in an orchard of winter apples. I find that rather a hard question to answer, as there are several things to consider. In the first place, I believe the use of early apple trees is advisable. Most of them have the two characteristics necessary in a perfect filler—they are upright in growth and they bear young.

Yellow Transparent is the most perfect filler tree I know. It is almost as upright in growth as a pear tree, and it bears extremely young. Its great fault is its susceptibility to blight. If it wasn't for blight, Yellow Transparent would be my first choice for a filler. Liveland Raspberry probably comes as near being an ideal filler as any other variety, although it is not quite as upright in growth as Yellow Transparent, but it bears just as young, and I never knew it to be injured by blight. Other early ripening sorts that could be successfully used for this purpose are Benoni, Henry Clay, and Duchess. Everything considered, however, Liveland Raspberry is probably the best of them all for the purpose.

On the other hand, if the grower prefers to use a winter apple, the same three points—young bearing, early bearing, and upright growth—are to be considered. In the southern part of the apple belt, Ingram could very well be used for that purpose, also Champion, as they are among the young bearers, and the Ingram especially is very upright in growth. As you go north, however, I would use King David, Jonathan, Grimes Golden and Wealthy, as I have found these sorts most satisfactory.

Many growers plant their fillers in the row and not between the rows. If your permanent orchard trees are planted 30 feet apart each way, then they will stand 30x15 if fillers are planted in the row, so there will be plenty of room for the spray tank the 30-foot way. The fillers can be kept pruned in and in somewhat of a fan shape, that is, keep them pruned back closer on the sides nearest the permanent trees and they can grow farther out in the open space.

Fillers are all right. They have made it possible for many good standard orchards to be grown, as they brought profit while the permanent trees were growing, and I have known of cases where the fillers have brought enough profit to pay for the land, the trees, all expenses, and left a nice profit besides before it was necessary to remove them. One thing is necessary, however, and that is, the grower must be confident that he has sufficient nerve to cut out the fillers before they are large enough to injure the permanent orchard. Peach trees and cherry trees are also used as fillers and give good results as both bear young.

I believe in fillers. They pay. But I never advise a man to plant them without telling him that they will seriously damage his orchard if he doesn't take them out at the right time.

Fruits supply many elements for building up the human body.

GRIND FEED -
USING YOUR AUTO AS A STATIONARY ENGINE

YOUR Automobile will furnish sufficient power for grinding feed, sawing wood, filling silo, shredding corn and all other work a 14 H. P. Gas Engine can do.

Our Equipment Fits,
Ford Overland Hudson
Ferdson Dodge Reo
Studebaker Buick & others
Simple to connect—does not harm your car.
Get one NOW—hundreds in use.
Satisfaction guaranteed—only \$35.00

LAWRENCE E
AUTO POWER EQUIPMENT

Write for Circular.

400 Minnesota St. ST. PAUL, MINN.
LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

400 Minnesota St. ST. PAUL, MINN.

LAWRENCE AUTO POWER CO.

4



You Can Now Get a Pair!

The trenches in Flanders are now empty and it is no longer necessary to keep supplying the boys "over there" with U. S. "Protected" rubber boots.

So, instead of making trench boots almost exclusively as we have been doing, we have reverted to our before-the-war manufacturing program, and will soon make up the shortage that exists in the supply of heavy-service, double-duty U. S. "Protected" rubber footwear.

Uncle Sam has furnished "our boys" with the best rubber boots that money can buy, and, in both the Army and Navy, there probably

are as many U. S. "Protected" rubber boots as all other brands combined.

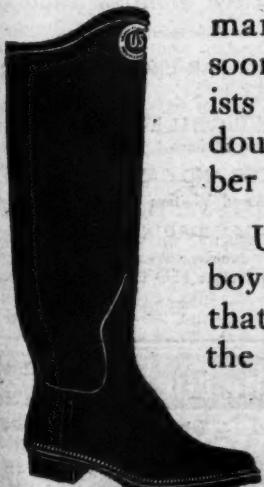
Outdoor workers everywhere recognize the dollar-for-dollar value of "U. S." quality. It means rubber boots of the sturdiest construction, reinforced where the wear is greatest, yet entirely comfortable. Longer wear insures saving of money.

Every pair of U. S. "Protected" rubber boots bears the "U. S. Seal"—trade mark of the largest rubber manufacturer in the world. Look for it. It is your protection.

United States Rubber Company

New York

U. S. Rubber Footwear



The American Pomological Society

After a series of delays directly and indirectly due to war activities, and augmented by the influenza, it is gratifying to learn that the first half of the proof for the report of the Boston meeting is now in the hands of the several authors and the secretary. As there appears to be no reason for further delays in the printing of the report it is expected that copies will be in the mails by the close of February or before. There is still time to get your name on the membership list and receive a copy as soon as issued. The volume will be excellently illustrated and will contain several papers of particular value to both amateur and professional pomologists. The regular membership fee for the biennial period is \$2.00; for life, \$25.00; for associate societies \$10.00 and \$5.00 respectively. Further information upon the subject of the society and its program of activities may be procured by addressing Secretary E. R. Lake, 2083 Park Road, Washington, D. C.

Recently the president has been advised that many of the state horticultural societies have taken action covering the new membership, given life at the Boston meeting. This betokens a renewed interest on the part of the state societies in this old and stable organization and bespeaks much for the increased activities, attendance and results at the next meeting, which probably will be held in some eastern center the latter part of 1919, though as yet the executive committee has not taken action upon the questions of time and place for the event.

It is expected that New York, Pennsylvania, Delaware, Maryland and the District of Columbia will be in the race for the convention. If the reader has any preference or knows any good reasons why some place in particular should be selected he ought to write the committee or secretary his views.

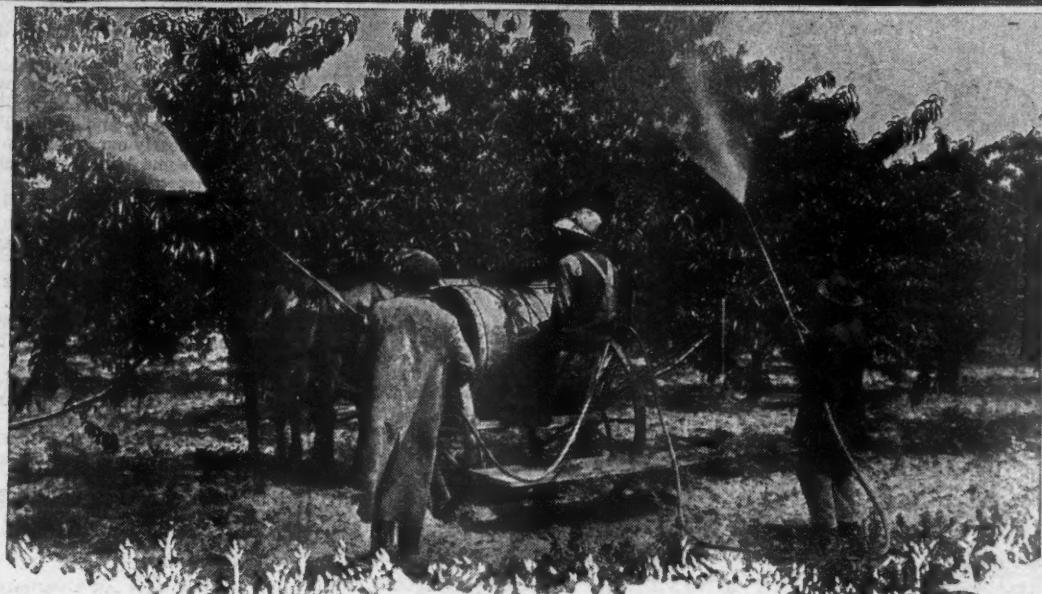
A feature of the 1919 session will be another student judging contest. Committees in charge of the several phases of the society work will soon be announced; in particular will an early announcement be made of the committee in charge of the score card, judging contest and exhibits, and of the state vice-presidents, who, now being elected in many cases under the new membership plan, will be held as the state center-posts around which the activities of the American Pomological Society in each state will focus, thereby making numerous locally organized agencies for the encouragement and promotion of our varied national pomological interests.

These centers will also permit of making letter arrangements for transportation of delegates and members to the meetings; of arranging for exhibits; of promoting the publicity work of the society; of advancing the interests of district, state and national judging contests. The numerous other activities in which the society has been engaged as well as the new ones to be introduced and fostered under the new scheme for a comprehensive, high-class, amateur organization seeking to advance and up-build our great continental fruit interests, will likewise be stimulated and directed by such agencies.

FOURTH ANNUAL TRACTOR SHOW

The Fourth Annual National Tractor Show will be held in Kansas City from Feb. 24th to March 1st. A gigantic tractor home is being erected to fill the immensely increased demands for space. Every foot of the available 110,000 square feet of exhibit space has been reserved. This show carries the first indorsement of the National Tractor Manufacturers' Association, and recommendations from the National Accessory Manufacturers and the United States government. Many foreign governments have declared their intention of sending special missions to attend the 1919 Tractor Show in order to study the types particularly adapted for use in their respective countries. There will be over 350 different exhibits of tractors, tractor accessories and power farming machinery. This will be the most complete exhibition of an agricultural nature ever attempted in the history of America.

You will make a reputation, not by a single great action, but by a long succession of little useful ones.



One Sprayer for All!

—Orchard, Field and Vineyard

SPRAY your orchard now with the same machine that you will need later for spraying potatoes, strawberries and other row crops. With it you can "top-spray" six to ten rows of potatoes at a time or "drop-bar" spray for blight later in the season as shown below. Furthermore, take the engine off your Iron Age Sprayer and put it on your potato digger when harvest time comes.

Divide the cost of your Iron Age Sprayer among the various uses and it will be small indeed, while the earnings will be greatly multiplied. The same crop insurance will be extended to cover many crops.

Iron Age Engine Sprayers do a *real* job. They work at high pressure—fully 250 lbs.—reducing the spray material to a fog that clouds around and under every leaf, stalk, twig, and goes into the cracks of the bark, leaving no place for insect or disease.

The two-wheel sprayer, shown here, is best for hillsides and where easy, short turning in orchard is necessary. We also make four-wheel orchard sprayers of larger capacity. Also barrel and hand sprayers.

Get the FACTS. Learn why the new Iron Age Duplex and Triplex Pumps work more steadily than others—how the stuffing-box and hollow plunger principle does away with the old bored cylinders

and plunger leathers or rubbers that corrode and wear out. See the ball valves that have nothing to wear out or corrode. Many points such as these ought to be looked into before you buy a sprayer.

See the Iron Age dealer today and let him explain the merits of the machine to you. Write us for full information.

Bateman Mfg Co.
Box 16B GRENLOCH, N.J.



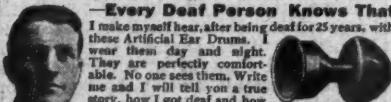
IRON AGE

HEAVEN AND HELL

Swedenborg's great work, 400 pages, 15 cents postpaid
Fastor Landenberger, Windsor Place, St. Louis, Mo.

NO JOKE TO BE DEAF

Every Deaf Person Knows That
I make myself after being deaf for 25 years, with
these Artificial Ear Drums. I
wear them day and night.
They are perfectly comfortable.
No one sees them. Write
me and I will tell you a true
story, how I got deaf and how
I make you hear. Address
GEO. P. WAY, Artificial Ear Drum Co., Inc.
59 Adelais St., Detroit, Mich.



CHRYSANTHEMUMS—Giant Flowered
for the home garden. 12 assorted fine clumps \$1.00.
DAHLIAS—the cream of the new show and
cactus kinds, 12 for \$1.00.

GLADIOLI—choicest new cut flower sorts, such
as **Peace**, **War**, **America**, 100 for \$2.00.

HARDY ROSEBUSHES—12 choices for \$2.00.

ASSORTED HARDY PERENNIALS—phlox,
foxglove, iris, etc., any 12 for \$1.00.

Any above shipped now, or **Advance Orders**
for spring delivery, with cash, will be accepted at
10 per cent discount.

THE HARLOWARDEN GARDENS & GHS.
Greenport, N. Y.

PLANS FOR POULTRY HOUSES!

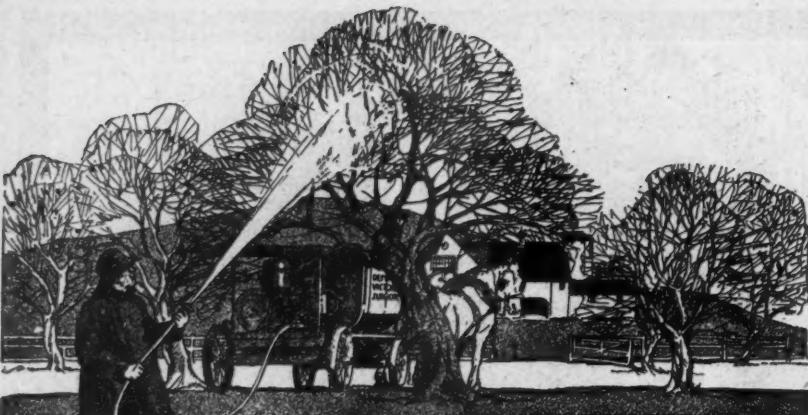
ALL STYLES, 100 ILLUSTRATIONS, SEND 10 cents.
Inland Poultry Journal, Dept. 4, Indianapolis, Ind.

STRAWBERRY PLANTS 1,000,000 AT
Bargain Prices. H. Graf, Braks Co., Pa., says: "I never received such
nice plants." Write today for free Catalog about the
Strawberry—a money crop.

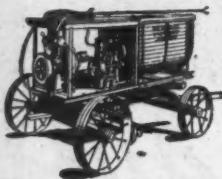
C. S. PERDUE, BOX 15 • SHOWELL, MD.

FREE
Send what you want, postpaid,
30 cents, for sets 15 are sent
100 pictures or 25 plans, post
card and 100 cents. Order your choice.
GATES SUP. CO., Dept. 437, Chicago.

Kindly mention American Fruit Grower when answering advertisements



Simplified Spraying



VICTORY and
VICTORY JUNIOR
*The Big Brothers of the
Deming Spraying
Family*

THE Victory—the most practical, up-to-the-minute money and time-saver in use today, incorporates every point of value developed and perfected in 40 years of pump manufacture—200 gallon tank.

The lightweight Victory Junior—a powerful sprayer especially adapted to soft or hilly ground—weight, 100 lbs. with empty tank—pressure, 250 lbs.—150 gallon tank

DON'T spend your spraying day in profitless overhauling of an out-of-date or inferior rig. Get results—not exercise.

Deming 40-year-perfected designs eliminate exasperation. Every working part is accessible. Large open waterways, and other guards against clogging, reduce stoppages. Ample strength properly placed insures long life under hard usage.

Send for Deming 32-page 1919 Catalog—a book that shows a sprayer for every type of use. You will find an outfit exactly fitted to your needs in this interesting, fully illustrated handbook. Free on request.

THE DEMING COMPANY
920 Depot St.

Salem, Ohio



Orchard Disking Pays! AND THIS ORCHARD FOLDER TELLS WHY

Bigger and better crops this Season will result from proper and deep cultivation with

Clark
CULTIVATOR

ORCHARD
IMPLEMENT

We make extension head disk harrows—double with rigid frame—single and also California Orchard Plow with reversible feature; at least one special orchard tool that fills your needs. Write for this special folder on orchard tillage.



The Cutaway Harrow Co.
411 Main Street
Higganum, Connecticut
Maker of original CLARK
Disk Harrows and Plows

BUSH CAR-FREE
This Five Passenger 27 H. P. car 7.25 in. wide, built on All Steel Frame. Timken, Delco, Ign., Dyno, Stg. and Linc. Write at once for my great Free Offer and 48-page catalog. Agents wanted to drive and demonstrate. Territory open. Prompt shipment. One month. Care of Mr. George J. Bush, President, Dept. B-100, BUSH MOTOR CO., Bush Temple, Chicago, Illinois.

Beacon Lamp FREE
Lights Your Home Like Day.
100 Candie Power Incandescent
pure white light from (Kerosene) coal
oil. Seats either gas or electricity.
COSTS ONLY 1 CENT FOR 6 HOURS
We want one person in each locality to
whom we can refer new customers.
Take advantage of our Special Offer to
secure a Beacon Lamp FREE. Write
today. AGENTS WANTED.

HOME SUPPLY CO., 14 Home Bldg., Kansas City, Mo.

Some Notes on Scale

By E. W. Mendenhall, Ohio

The San Jose scale has caused nurserymen more trouble than any other insect pest, and is the one that really brought about the nursery and orchard inspection law, which nearly every state in the Union now has in some form regulating the shipping of nursery stock.

Our first nursery and orchard inspection law took effect in Ohio eighteen years ago. At that time the scale was spreading very rapidly over the United States. It infested practically all of our fruit trees and many of our shade trees and shrubs. Nurserymen as well as orchardists, were alarmed, and many were frightened out of the business.

The danger of its dissemination by shipping nursery stock became a problem, so it became necessary to require inspection and destruction of infested stock. Now it looks a little brighter for the nurseryman, and the fruit grower especially, in regard to the control of scale insects, for we note in the past two or three years a decrease in the amount of stock infested by the San Jose scale.

Causes for Decrease

This is probably due to three causes, viz: First, the careful inspection and destruction of badly infested stock, and the methods employed for further safeguard by fumigating plants with hydrocyanic acid gas before distribution, and the proper and intelligent spraying on the part of the nurseryman. Also to the keeping of the surroundings clean from scale insects to a safe distance. This has done much to help in eradicating the scale from the nurseries. Young, cultivated stock is, as we know, more susceptible to scale insects than older plants.

It is the part of the nurserymen to keep their stock as clean as possible from insect pests and plant diseases, for it means dollars and cents to them. The use of soluble or miscible oils as a spray for nursery stock, is very satisfactory and I believe can be safely recommended for young stock.

Natural Enemies of Scale

The second reason for the spread of scale being reduced in the nurseries and orchards for the last two or three years, may be due partly to parasites or natural enemies. We know that in China and other foreign lands, the scale insects are controlled wholly by natural conditions, but as soon as they got to our shores they began to multiply and spread very fast, as they are here undisturbed by these enemies.

But now we find the ladybug beetle more numerous each year, and no doubt they destroy, and aid greatly in holding the scale insects in check. One of the more common predaceous insects which are most frequently observed feeding upon the scale, is the pitiful ladybird. Another variety which is quite common is the twice stabbed ladybird. It is almost identical in appearance with the Chinese or Asiatic ladybird, which was introduced into the United States from China through the activities of Prof. C. L. Marlatt, of the United States Bureau of Entomology. It was not a success in Ohio, being subject to a native parasite by which it was in turn destroyed.

There is another, a very small four-winged fly belonging to the parasitic hymenoptera, which is a true parasite of the scale insects. We find there are many parasites and predaceous insects that attack the scale insects. However, the work of all the enemies of this pest has not been sufficient in this country to overcome its enormous fecundity.

Dr. L. O. Osgood, who has given much attention to parasites of the San Jose scale and other scale insects, has prepared a list of these parasites. Prof. H. A. Surface, of Pennsylvania, did some work along this line and introduced a parasite which it was claimed would destroy the San Jose scale. Some were introduced into Ohio but without much success.

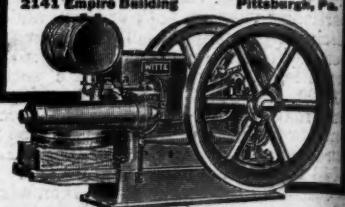
Some attention has been given to the fungous diseases of the San Jose scale. Prof. P. H. Rolfs, Director of the Florida Agricultural Experiment Association, has done considerable work in this connection, but this parasitic plant depends upon certain weather conditions and may be useful on some sections of the country.

The third cause for the apparent decrease of scale may be weather conditions.

**NEW
KEROSENE
ENGINE
PRICES**
Immediate Shipment

Get my latest direct prices on Kerosene Engines, Portables and Saw-Rigs. 2 to 30 H.P. Save \$15 to \$200. Twice the power at about half the cost of using kerosene. Immediate shipment—no waiting. Engine Works. WITTE Engine Works—big surprising power. Simple and easy to handle. Used by thousands. I ship everywhere in the U.S.—Guaranteed safe delivery. Write for my new prices today.—ED. H. WITTE, Pres.

WITTE ENGINE WORKS
2141 Oakland Avenue
2141 Empire Building
Kansas City, Mo.
Pittsburgh, Pa.



Send NO Money!

There is so much Style, Comfort and Quality in these NATIONAL DRESS SHOES that we are willing to send you a pair yourself. No Money is Advance—all charges prepaid. These are so wonderfully good that we invite you to try them at our risk. Smart and stylish. Genuine oak leather soles. Broad low heels. Extra quality uppers. An honest shoe is a good shoe.

Build for five toes and comfort. You must see them to appreciate their Style, Quality, and Workmanship. They must convince you or you will not be out one cent. Send for a pair on approval. Pay \$3.85 on arrival and examine them at your pleasure. Compare them with the best \$7 shoe you ever saw. Remember, we guarantee to return every cent if these wonderful shoes do not please you.

Mail Coupon Today

BOSTON MAIL ORDER HOUSE, Dept. G

Essex P. O. Building, Boston, Mass.

Send my pair postpaid. I will pay only \$3.85 on arrival. Since I am buying these on approval, my money has double quick if I want it. I risk nothing.

Name.....

Address.....

Delivered TO YOU FREE

Your choice of 44 styles, colors and sizes in the famous line of bicycles. Full color in the Boston, Free Catalog. We pay all the freight charges from Chicago to your town.

30 Days Free Trial on the bicycle you select, actual riding test in your own town for a full month. Do not buy until you get our great new terms of offer. Factory Direct-To-Rider terms and prices.

TIRES single wheel and spoke parts for all makes of bicycles at half usual prices. No one else can offer such values and such terms. **TIRES** single wheel and spoke parts for all makes of bicycles at half usual prices. No one else can offer such values and such terms.

MEAD CYCLE COMPANY Dept. N-127 Chicago

AGENTS: \$40 A WEEK

New patented stove. Burn coal oil. Big money saver. Cooks a meal quickly. Ideal for factory men warming up noon meals. Easily operated. Starts and turns off quickly. No expense. Absolutely safe.

Not Sold In Stores

A prospect in every home, store. Agents having wonderful success. Quick seller, no profit. Easy to demonstrate. Supplies furnished to workers. Write for agency. Don't miss this big chance.

THOMAS STOVE CO., 170 NAM ST., DAYTON, OHIO

Heat and Cook with Oil
Oliver Oil-Gas Burners Fit Any Stove

Attach to your stove, fill the tank with kerosene or coal oil and it's ready for use. Economical. Cooks and bakes better than coal or wood. Gives more heat. Turns on and off like gas. No fire to start. No kindling, ashes, coal or gas. Saves money on fuel daily.

Oliver Oil-Gas Burner & Machine Co. 169 North Broadway, ST. LOUIS, MO.

Kindly Mention American Fruit Grower when writing to Advertisers

Picking the Fruit

By E. I. Farrington, Massachusetts

Fruit growers, like farmers in general, will find themselves confronted with a serious labor shortage this year. It will be necessary, therefore, to use as many labor-saving contrivances as possible. One of the best is a ladder on wheels, which was



Handy Orchard Contrivance

Can be easily made on any farm. Heavy ladders are hauled from tree to tree. No broken branches when this is used.

first contrived by an eastern fruit grower. It is only necessary to have a pair of old buggy wheels, a scaffold being constructed as shown in the illustration. A pair of rough handles allows the ladder to be pushed to any point in the orchard. This ladder has several advantages in addition to saving labor. It does away with much heavy lifting, and saves the breaking of branches, which usually results from resting ladders against the limbs. Moreover, it makes it possible for the picker to reach the fruit at the ends of the branches without difficulty, and without bruising the bark. A ladder of this kind is also useful for making repairs about the farm buildings.

Another kind of ladder which makes quick work in the picking of fruit is wide at the bottom, but narrowed until the sides meet at the top.

An extension ladder may be necessary for high trees, but such trees are not economical at the best. Extension ladders are bungling and heavy to handle. Light single ladders are better when they can be used. Very good home-made ladders can be fashioned by using white pine poles from the woods. It is always best, though, to use dead pines, if they can be found. Ladders made in this way are light and easy to handle. It isn't necessary to bore holes through them for the rounds. Cleats nailed on will be just as satisfactory.

Three-Legged Ladder

Cherry wood is very brittle, and when a ladder is leaned against the branches, the latter are likely to be broken. Moreover, cherry trees are rather hard to get into, and many growers prefer ladders with three legs. The ordinary stepladder is not satisfactory, because a perfectly even surface is required to set it on. Irregularities in the ground are of no consequence when the ladder has three legs. The best picking ladder of this kind is spreading at the bottom and meets at the top, the third leg being hinged so that it can be moved in any direction.

Peach trees being usually low headed, the fruit can often be harvested without the use of ladders. In some orchards a picking bench is found useful. Such a bench, about three feet high, is easily moved about and two men can work from it.

A combination ladder now on the market is extremely convenient, although rather expensive. It is mounted on wheels, and can be pushed about easily. Besides the long ladder, which reaches to the top of ordinary fruit trees, there is a secondary ladder on the other side of the machine, so that two men can work together, the fruit on the top and lower limbs being gathered at the same time.

Another
FEDERAL

Federal Heavy Duty Tractor, with a capacity of seven tons, operated by the San Diego Fruit and Produce Co., at San Diego, Cal.



Federal Reliability means greater fruit profits

THE big problem of fruit raising is to get work done at exactly the right time. This applies particularly to the marketing of the ripe fruit. It must reach the market quickly, and in perfect condition.

This service is afforded most satisfactorily by the Federal, because of its unusual reliability. It is always on the job—when the job is to be done! Rugged strength, stamina—a truck equal to any task at all times.

Combine with these advantages the Federal economy, and you can understand the universal preference for this truck.

Write us and we will send you the magazine, "Traffic News," a publication for the truck buyer and owner.

Federal Motor Truck Company
32 Federal St. Detroit, Mich.

FEDERAL

One to Five Ton Capacities

Green's
Trees

Pedigree Trees
Grown from Bearing Trees
Of highest quality at moderate prices. 40 years' experience.
\$100,000 capital. Four nursery farms. Buy direct from the old and reliable Green's Nursery Company and

SAVE BIG MONEY

No agents employed. Apple trees, pear, cherry, plum, peach, quince, nut trees, grape vines, gooseberry and currant plants, raspberry, blackberry, strawberry, shade trees, shrubs, vines and roses for sale. Largest and oldest nursery selling

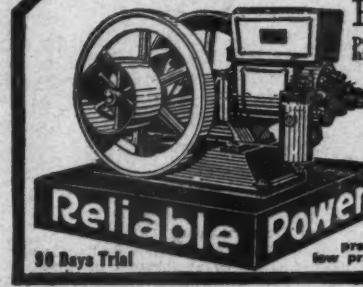
DIRECT TO PLANTERS

Write for free catalog, also ask for free Fruit Book. Head our true-to-name guarantee. Address GREEN'S NURSERY CO., 105 Wall Street, Rochester, N. Y.

lower Prices Now

BEST time now for getting your new engine—prices lower—prompt shipments. More power, per gallon, from cheap Kerosene than from high-priced gasoline. Easy to start in any kind of weather. Same engine also burns gasoline.

OTTAWA



Kerosene and Gasoline Engines. For all outdoor and indoor uses. Sizes 2, 3, 4, 5, 6, 7, 8, 10, 12, 16 and 20 H.P. Stationary, Portable and Snow-Big styles. 10-Year Guarantee. Get our catalog and prices and see big saving you can make now. Book Free. Easy to understand. Explains all present low prices. OTTAWA MFG. CO., 1174 King St., Ottawa, Kan.

How to Prune the Apple Orchard

The Most Important Orchard Operation

By Paul C. Stark, Associate Editor

WHEN an orchard is first contemplated, the planter gives much thought to the selection of varieties, to the preparation of soil, planting the tree, cultivation, the use of fillers, growing crops between the rows, and many other questions, but too few of them give the serious consideration to the subject of pruning that is necessary to grow the kind of orchard required to bring a maximum of fruit and a maximum of profit.

Pruning is one of the most important problems that confronts the orchardist, and I think the least understood. Many tree growers wait until trees are mature, and then use an ax and saw freely and "trim" their trees every few years, and really think they are pruning.

The proper pruning of a tree begins at planting time, and each tree, as it develops, should be given individual study and individual attention, as practically no two trees in the orchard will present the same problem and no two trees can be pruned exactly alike.

Why We Prune

There are many reasons for the use of the knife in the orchard. At planting time, we prune the roots of the trees—then we prune the head, cutting it back in proportion to the loss of the roots. We prune at planting time to regulate the shape of the tree. During the dormant season, we prune weak growing young trees to force a stronger growth. We prune moderately during early summer to check the growth and thus throw tardy trees into bearing, and we prune in order to thin the fruit and thus tend to correct the alternate bearing habit, which is largely the result of overloading the trees so they have to rest up every other year. We prune to control disease, and we prune to let sunlight to the fruit in order to secure color. We prune to relieve the tree of its dead, dying, or weak branches. We prune to facilitate picking, and we prune to keep fruit from being borne on the ends of long, slender limbs. No operation in all fruit growing is so important as the use of the knife. When properly used, it is the greatest factor in the production of regular crops of good fruit. However, pruning without knowledge, or pruning without a definite object, is about as bad as no pruning at all.

The scientific pruner, when he approaches a tree, studies it, sees its present shape, its faults, visualizes the tree as it should appear after it is pruned and how it should look in future years; he decides on just what limbs should come off and just what limbs should be headed-in, and just where the cuts should be made in order to make the tree grow into the shape that he has in mind. Then he begins his work.

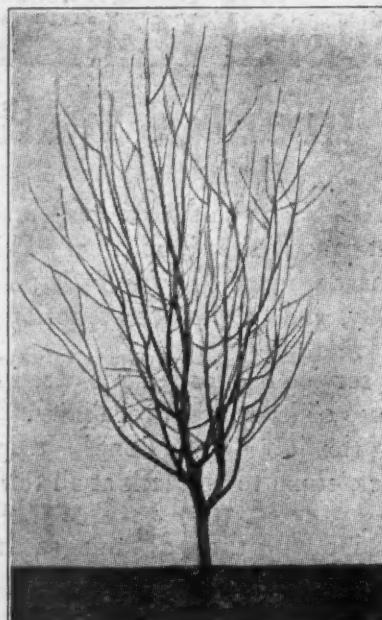
Many men have their own plans of pruning; they grow trees according to their own ideas for one reason or another, so no binding rules can be laid down as to a course that will suit everybody.

In this day and age, what is known as the open-headed tree is preferred, and naturally the open-headed tree should be headed low—that is, the bottom limbs

should be close to the ground, which always facilitates picking, spraying, pruning, prevents sun-scald, and insures better colored fruit.

The Open-Headed Tree

Apple trees are transplanted from the nursery to the orchard when either one or two years old. The one-year tree is a straight whip, which is very simple to prune, merely heading it back to the height desired. When planting two-year-old apple trees already headed, you will find in nearly every tree what we may term a central leader, that is, one long branch



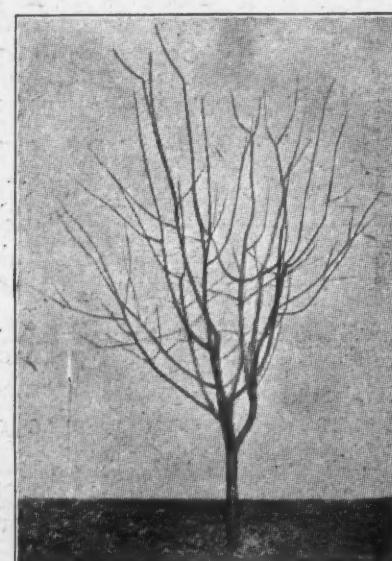
Before and After Pruning a Five-Year-Old Apple Tree

This tree has been allowed to grow bushy and required considerable thinning out. One of the main limbs in the center of the tree has been removed to allow sun and air to get to the center of the tree. The upward growth has been checked by heading-in to branches that point outward. Note there have been left a number of branches along the limb to grow into fruit spurs.

at the top of the tree that, if left undisturbed, will grow straight up and make a tall, pyramidal tree. The present day idea is to cut out that central leader right at the body of the tree, and just above the limb that is to be the top limb of those left to form the framework of the tree; then to select from three to five limbs, that have started evenly arranged around the tree, to form the framework, and the limbs should be selected so no bad crotches will result. When planting, these limbs are generally cut back about one-half, and, as the pruning is toward an open-headed tree, make the cut just above a bud that has started on the lower side of the limb.

The reason for this is obvious; when that bud starts growth, it will have a tendency to grow outward instead of upward, thus growing toward the spreading shape desired. Leave the center of the tree open and thus throw growth toward the sides.

Do not prune carelessly or hurriedly. Make cuts clean, smooth, and in the right place (do not leave snags—cut close to trunk or limb) and always keep in mind that early training of your trees is extremely important, and that it is necessary to develop a shapely tree while it is young so that it will be shapely when it attains age. If given this kind of attention, the orchard will never need one of those severe prunings later on, which often proves such a shock to the tree and causes a growth of



(Courtesy Agricultural Division, Frisco Railroad)

ground, and do this pruning in the spring before the buds open. If fruit trees are planted in the fall, do not cut back at that time. After pruning, watch the tree, and when the small shoots appear on the one-year apple tree, select four or five properly placed around the tree for the frame, and rub off all other buds, thus throwing the strength into the buds you are leaving. In this case, the second-year pruning is just exactly what it would be on a two-year-old tree at planting time.

The average person would think that the two-year-old apple tree, planted in the orchard at the same time as the one-year-old tree, would bear younger. This is not the case, because the one-year tree does not receive such a shock or check as the two-year tree by transplanting, hence the one-year tree starts a more rapid growth and comes into bearing just as soon as the two-year tree. Many men have their own ideas of pruning, and the one-year tree can be headed at the exact height the individual desires, while the two-year tree has the framework trained in the nursery, which may or may not meet with the personal ideas of the individual grower.

Pruning Third Year

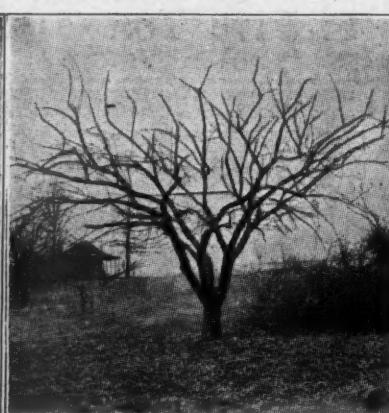
For the third-year's pruning of the one-year tree (which is the same as the second-year pruning of a two-year tree) select two or three limbs on each branch left the preceding season, remove broken or unnecessary branches, and cut back the ones chosen one-third to one-half. When the tree is older, there should be plenty of fruit-bearing wood distributed along the branches; this should be borne in mind, and when removing the branches, which are not to become the main branches or framework of the tree, just head the branches to stubs three or four inches long. The stubby branches will tend to develop into fruit buds and will give a large bearing area. Quite often the new pruner makes the mistake of stripping limbs clear, and thus puts all of the bearing area on the outside of the tree. The tree can bear a much heavier crop without breaking if fruit is distributed evenly along the limbs. This same general plan can be followed throughout the early life of the tree, but as the tree gets older, there should be a smaller percentage of growth headed-back, although it is necessary to keep this new growth thinned out, so the tree will not get bushy or dense.

Remember always to keep the top open and let in plenty of air and sunshine, which will mean better-colored fruit and less fungous diseases. In cutting, always consider the direction the new growth should take and turn the growth that way by pruning to a bud that is headed in the right direction.

In shaping the tree, where three to five limbs are left to form the framework, they should be so placed around the trunk that if observed from above, or if photographed from above, directly over the tree, the body of the tree should seem as the axle and the three, four, or five limbs should seem



(Courtesy Agricultural Division, Frisco Railroad)



Renovating An Old Tree—Before and After Pruning
This tree is headed too high to make an ideal tree. Many of the branches in the center of the tree have been cut out to let in sun and air. Long stubs at the lower part of the tree have been cut off even so the wounds will heal. The limbs have been headed-back to prevent too rapid an upward growth. This would also tend to force fruit spurs to form along the limbs. There are a large number of trees of this character throughout the United States that can be trained into profitable crop-producers by intelligent pruning. Don't make the mistake of heading-back the big limbs too severely as that merely tends to make the tree form water sprouts and to further delay bearing.



A Central Western Orchard Which Has Been Properly Pruned and Cared For

Nothing responds quicker to good treatment than an orchard. Take care of your orchard and it will make you rich.

as the spokes of the wheel, and equally placed, yet far enough apart, up and down on the body, to leave plenty of room when the limbs grow to large size, and to prevent bad crotches.

Rejuvenating the Old Orchard

If careful pruning, as outlined above, is not followed at planting time and when the tree is young, severe cutting will be necessary after the tree has obtained age before it can be forced into the right shape and before it will be in proper condition to bear a profitable crop.

An apple tree that is left to its own resources and grows without pruning is generally thick and bushy. The center is shaded, making proper spraying impossible, as well as the proper coloring of the fruit. As a result most of the fruit is borne on the outside of the tree, whereas much of it ought to be distributed along the limbs. Orchards that have been neglected when young, if taken in time, can often be worked over, and after a year or two, put on a profitable basis. In many cases, these uncared-for trees are affected with disease and insects, and many are prematurely in a seeming dying condition. If the trees are too old and too far gone, it will probably pay to cut them out.

However, neglected trees that have been headed moderately low, and where the lower branches are in good condition, can often be successfully renewed by a process of thinning out, heading-in and pruning down.

Where no pruning at all has been practiced, the general object should be to work toward a low-headed tree. The best time to do such severe pruning as is often necessary in these old orchards, is on a mild day during late winter. The central leader in the tree should be cut back just as far as considered safe, and the entire interior growth of the tree should be thinned out. The healthy, spreading side branches may be left. Thin out in the center all branches that are not needed and all branches that are growing in the wrong direction. All this is to open up the head and allow the sun and air to get into the middle of the tree. Not all of the young wood in the center should be cut out. Some young wood should be left to produce the following season's growth. A few small branches along the main limbs in the center will give sufficient shade to prevent sun scalding of the big limbs in the center of the tree. In cutting off limbs always make the cut as close to the body as possible, and make a smooth cut. Do not leave snags; they do not heal, and finally decay and weaken the tree.

Further Pruning of Old Trees

To sum up, cut out the leader, shorten back all other limbs growing upward, leaving any side limbs that are growing properly and that do not have an upward tendency. Thin out the small limbs where the tree seems too bushy.

The following season, the growth that starts on the limbs that have been cut back should be pruned, and the cuts made above a bud, so that the limbs resulting will grow in the proper direction to shape a spreading tree. The direction of growth can thus be regulated. If these limbs throw out a number of young shoots, they should be thinned out, leaving only enough to furnish sufficient bearing wood, but each limb left should be cut back as indicated above so as to cause them to make lateral spreading growth rather than upright growth.

In old orchards, where rejuvenating is attempted, it is best immediately after pruning operation, where severe heading-in and thinning out has been practiced, to spray them thoroughly with lime-sulphur during mild days of late winter or early spring before buds start. Having been properly thinned leaves them in excellent shape for this cleaning-up spraying to effectively control diseases and insects.

In making large cuts in old orchards, saw first on the underside of the limb part-way through, then saw from the upper side to meet the undercut. This method prevents splitting. After the branch has been removed, the wound smoothed off and given a chance to dry somewhat, then paint with pure white lead and raw linseed oil. It is sometimes advisable that these large wounds, and in fact all wounds made in pruning, be sterilized by the application of a wash to protect from infection through the entrance of spores or bacteria. A germicide, such as corrosive sublimate (one tablet to a pint of water) can be used. This plan is not generally followed, but often advisable.

These severe prunings for the renewal of

old orchards will be of little profit unless they are followed up by moderate, judicious annual pruning—the same thinning out and heading-in process, though, of course, the second and third years' pruning will be the thinning out or heading-in of new growth, as the first pruning should give the trees the proper shape. These later prunings from year to year will be much simpler and more easily done.

Profits from Old Orchards

I have seen some old orchards renewed that have brought good profits to the owner. I have seen orchards that were practically worthless brought into shape where they have paid the owners from \$200.00 to \$300.00 per acre within two years. However, my advice to owners of old orchards is to not make the mistake of trying to renew an old orchard that is too far gone, and remember that it will often take longer to get these old trees in bearing condition than it will to grow new trees. Again, if the trees are far gone, the neglect of past years that has left its legacy of disease and injury will hardly leave vitality enough to stand the severe heading-in that is necessary. In many cases, it will pay to blow these trees out and burn them, then plant a new orchard, and prune properly from the day the trees are planted.

An orchard that has been badly neglected for 18 or 20 years will generally be too far gone to "come back" to profitable bearing. Each orchard presents a different case, and it will depend entirely on its condition whether or not it will pay to spend the money to attempt to rejuvenate it.

As a general thing, an orchard 12 to 18 years old can be rejuvenated and brought back by scientific use of the saw and knife, and in these days, when fruit is needed and when every foot of ground should be made to produce, there is no excuse for the existence of an orchard that does not pay and cannot be made to pay. Look around your farm and see how many of your old trees can be rejuvenated.

Careful pruning from the first insures a profitable orchard. When planting an orchard, good soil is advisable, proper location, proper drainage and correct varieties are necessary; but remember, above all things, that pruning must be done if good results are to be secured.

PRUNING APPLE TREES

By E. L. Vincent, New York

A town man who has an apple tree in his back yard called me up the other day and asked when would be the best time to trim it. He had had no fruit on the tree for some time and believed it was because it needed pruning. From what he told me of the condition of the top, I agreed with him that trimming would probably do it good.

I believe this matter of the right season for trimming is a puzzle to a great many farmers. Some trim when they have time to "get at it." There is no uniformity in practice, and yet, certain principles may be our guide. One is that trimming done in winter, which is the dormant season, tends to produce a heavy growth of new wood the coming season. Where this is the case, we may not look for a very large growth of fruit; the strength of the tree is being put into the making of wood, not fruit. If done at all in winter, therefore, let the trimming be moderate.

Then, it is a doubtful practice to take out a great deal of wood in the summer season. Some hold that pruning at this season has the effect of bringing on a large growth of fruit the following year. This is not so sure. It depends upon how hard we prune. Some wood taken out in summer is very likely to bring on a heavy growth of fruit. Heavy pruning in hot weather usually gives many new shoots.

Where the pruning is done late in the fall and not too hard trimming is done, confining the cutting to removing the outer ends of growing leaders, we may reasonably expect a larger growth of fruit the coming season. This refers in the main to the mature tree. Young trees should have different pruning.

Whenever the pruning is done, the job is never complete until the branches removed have been gathered up and burned.

Apples again played a prominent part in relief work recently in Chicago, when such opera stars as Galli-Curci, Lina Cavalieri, Rosa Raias, Stracciari, and Rimini sang in the open street and auctioned off a carload of apples for war-relief in Italy.



You Will Make Money Using These Saws

The time and trees you save by using Atkins Pruning Saws will pay you a big profit on your investment.

Silver Steel Formulas—the result of 300 years of experience of the Atkins family in saw making.

With the development of the science of tree surgery, scientific pruning is being given a position of much more prominence than in the past. As saws enter largely into this work, the manufacture of special saws for this purpose has become one of our most important departments.

Atkins Pruning Saws cut easier, cleaner and faster. And they last longer because back of them is the famous quality of the

"The Saw on the Farm"—a book of carpenter helps tells how to build, how to make neat joints, how to care for saws. We will send it to you FREE, together with our "Pruning Saw Booklet" and information on any type of saw made. Send us your address.

E. C. Atkins & Co., Inc., Indianapolis, Ind.



Makers of Silver Steel Saws and Tools
Look for the "Atkins" name
on any saw



BIG PROFITS

Growing Strawberries

\$300 to \$500 per A.

made by beginners following

KEITH'S WAYS TO SUCCESSFUL BERRY CULTURE

Make one acre bring you more money than any other acre. Growers everywhere make big profits from Keith's guaranteed Berry Plants. Planting our berries, then our strong, well-rooted, true-to-name plants, guaranteed to satisfy or your money back. We ship you fresh dug plants, direct from our nursery, at wholesale prices.

Keith's Everbearing Strawberry Plants

bear berries until snow flies. Buy the kind that will supply your table with berries. A crop of berries this Fall from plants set this Spring. "Keith's Ways to Successful Berry Culture" tells how. It's Free.

A Guarantee That's Right!

Buy from us and you take no chances in losing your money. We guarantee every plant to be exactly as they are described. They are healthy, big roots, true to name, one year old, and guaranteed to reach you in good growing condition. You take no risk in sending us your order for we absolutely guarantee you satisfaction. We make good every order that proves to be unsatisfactory. "Keith's Ways to Successful Berry Culture" is sent you free. It assists you in growing berries successfully.

OUR 1919 CATALOGUE FREE

WAIT! Don't order until you receive our

1919 Catalogue. It will pay you big to do so!

We can save you \$2 to \$5 per 1000 on your plants. It also contains valuable and practical information on buying, planting and growing small fruits. It describes the best varieties of Strawberries, Raspberries, Blackberries, Currants, gooseberries, Grapes, etc. beautifully illustrated in natural colors. This valuable, instructive book is FREE.

KEITH BROS. NURSERY, Box 403 SAWYER, MICH.



THESE BOOKS
FREE

AGENTS WANTED

SEND FOR OUR
SPECIAL OFFER
TODAY

American Fruit Grower, 329 Plymouth Court, Chicago



"We Use Modern Methods, Too"

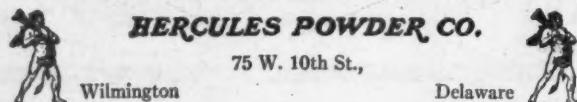
"I haven't had to borrow a cent since I started using dynamite to help me with my work."

"Three years ago I began to work the place with my head as well as my hands. I put up modern buildings and bought up-to-date machinery. But the thing that has helped me the most in getting ahead has been

HERCULES DYNAMITE

"Now-a-days the successful orchardists, like other successful business men, have to *make every move count*. We can't afford to dig the holes to plant our young trees in. We *blast* the holes. That method is quicker, cheaper and better for the trees."

"I am advising every one of my friends to send to the Hercules Powder Co. for a copy of 'Progressive Cultivation.' No one knows to how many uses dynamite may be put on the farm or in the orchard until he has read this book. The Hercules Powder Co. will mail a copy *free* to anyone who signs and sends in the coupon that is printed at the bottom of this advertisement."



HERCULES POWDER CO.

75 W. 10th St.,

Wilmington

Delaware

Hercules Powder Company,

75 W. 10th St., Wilmington, Del.

Gentlemen: Please send me a copy of "Progressive Cultivation."

I am interested in dynamite for _____

Name _____

Address _____

Western Canada's "Horn of Plenty" Offers You Health & Wealth



Western Canada for years has helped to feed the world—the same responsibility of production still rests upon her. While high prices for Grain, Cattle and Sheep are sure to remain, price of land is much below its value. Land capable of yielding 20 to 45 bushels of wheat to the acre can be had on easy terms at from \$15 to \$30 per acre—good grazing land at much less.

Many farms paid for from a single year's crop. Raising cattle, sheep and hogs brings equal success. The Government encourages farming and stock raising. Railway and Land Co.'s offer unusual inducements to Home Seekers. Farms may be stocked by loans at moderate interest. Western Canada offers low taxation, good markets and shipping; free schools, churches and healthful climate.

For particulars as to reduced railway rates, location of land, illustrated literature, etc., apply to Supt. of Immigr., Ottawa, Can., or

C. J. Brouton, 112 W. Adams St., Chicago, Ill.

J. M. MacLachlan, 214 Trac. Term' Bldg., Indianapolis, Ind.

George A. Hall, 122 Second St., Milwaukee, Wis.

Canadian Government Agent.

The Home of the Oregon Prune

By Mrs. P. M. Tallman, Oregon

What has become of the old-fashioned, dried up, sour, white-coated prune? The kind that was formally displayed in huge barrels, priced five cents a pound or six pounds for a quarter.

Surely they don't belong to this country; we have the ever-popular French and Italian kind here, so they must have been German, and, like the Germans, have fallen into bad repute.

Years ago, when I was a child, I looked upon the prune as a thing of mystery and reverence; a country that grew such a delectable fruit must be a wonderful place indeed. In those days prunes came in large barrels; the barrel tipped at just the right angle so one could look in, but not touch. How I longed to be a grown-up so I could taste by sampling just one. You see I noticed these grown-ups seldom bought when they did sample, for about that time they were sure to spy the dried apple barrel, and their attention was immediately directed toward it.

A Painful Thought

Later on we were taught that prunes were infected with microbes, and my imagination pictured them as covered with slumbering worms; all one had to do was to swallow a raw prune, and immediately the microbes would awaken into life and begin crawling somewhere in the region of one's stomach.

As I grew older the choice French prune took the place of the common barrel sort. Fat, plump and shiny, packed in a paper-lined and glass-covered box—marked: "Fourteen cents a pound." One pound served six persons with a spoonful left over for luck.

Now all this is past history, for I am actually living in the land of prunes. French prunes, Italian prunes, Williamette prunes, Silver prunes, seedlings, etc. I will deal with the first three.

Three Kinds of Prunes

The French, when green as they call it, meaning ripe but not dried, resemble the small pinky-red wild plum of the eastern states, sweet but with a thick skin. The trees are heavy bearers as a rule, and usually do better in the valley than the Italian.

The Italian, and Williamette are similar in looks and do better on higher ground, the latter ripening two to three weeks in advance and being considerably larger. They are purple, and like all dried fruit must be dead ripe for best results.

Prunes sell by size, called "test." Williamettes usually test thirty to thirty-five prunes to the pound. But oftentimes run smaller.

Italians, thirty-five to sixty-five. French, sixty-five to one hundred.

How Prunes Are Picked

When ready for the picking, men take long poles, with rubber attachment at the end, for hooking to a branch, and jar or shake the trees slightly.

The prunes are picked up from the ground into ten-quart pails, emptied into three or four-pail boxes, and paid for at the rate of five to eight cents per box, according to size and variety of prunes.

Whole families engage in this work, averaging \$1.50 to \$2.50 a day each, depending on the heaviness of the crop.

How Prunes Are Dried

They are hauled to commercial or private driers. Emptied a few at a time into wire baskets, plunged into boiling lye water to cut the dirt, rinsed in cold water, spread on wire trays, run into a closed compartment of 160 degrees heat for thirty-six hours, then removed and allowed to cool before taking from the tray. They are then sacked and delivered to the packing houses, as by previous contract given during the summer months at prevailing prices.

The drying costs the grower one and one-fourth cents a pound. (This year the price was higher.) Weighed after the fruit is dried, and fruit dries away considerably. A prune with the right amount of sugar should turn out a ton to the one hundred boxes.

The packing houses or evaporators put them through a special process of steaming, packing and boxing for the wholesale trade.

Surely the microbe in prunes is a thing of the past.

Get My Price FIRST

BECAUSE of the high prices generally prevailing you ought to get my price. You can buy direct from our factory at the lowest cost. But that isn't all. The Monmouth Disc is easier on your horses. Makes a better seed bed for larger crops, turns around as easy as a plow, cuts sods and clods and turns trash under.

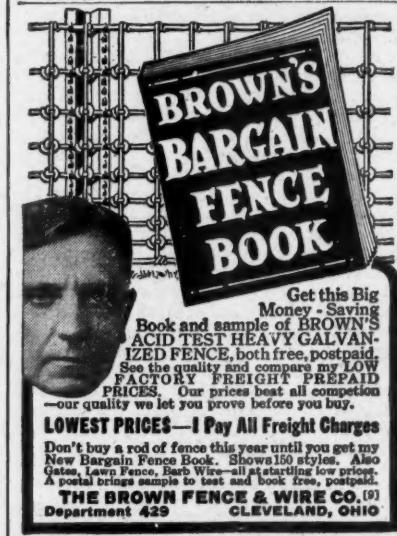
Monmouth Tongueless

Guaranteed for Five Years
Blades are made of high carbon steel. Adjustable scrapers, hard maple bearings, hard rollers and transport trucks if you want them. We also make complete line of Tractor Discs. Free trial for 30 days. Return it at our expense if not satisfied and we will pay freight both ways. Send a postal card for full list of our tools and supplies. Get my big Free Book and low money-saving prices now.

Complete Line of Tractor Discs
Ask the Plow Man with Monmouth Plow Factory 96 S. Main Street Monmouth, Ill.



Quick Shipments from Monmouth, Kansas City, Omaha, Fargo
Free Trial 30 Days



Get this Big Money-Saving Book and sample of BROWN'S ACID TEST HEAVY GALVANIZED FENCE, both free, postpaid. See the quality and compare my LOW FACTORY FREIGHT PREPAID PRICES. Our prices beat all competition—our quality, we let you prove before you buy.

LOWEST PRICES—I Pay All Freight Charges

Don't buy a rod of fence this year until you get my New Bargain Fence Book. Shows 150 styles. Also Gates, Lawn Fence, Barb Wire—all at starting low prices. A postal brings sample to test and book free, postpaid.

THE BROWN FENCE & WIRE CO. (S)
Department 429
CLEVELAND, OHIO



Free Catalog Shows you how you can save money by buying direct from the *Injured Berry Box and Basket Factory in the Country*.

New Albany Box & Basket Co., Box 102 New Albany, Ind.

Kindly Mention American Fruit Grower when writing to Advertisers

Boonville Apple Man Is Successful

At Boonville, Mo., lives Paul Jaeger. He has the distinction of having the highest percentage returns from his ten-acre orchard farm, year after year, of any orchard man in central Missouri.

Mr. Jaeger studies his orchard, his market and his returns, as carefully as does the best and most successful student of high finance. Thus the mistakes of one season are not repeated the next season, and we believe that this man has finally succeeded in stopping the major leaks that take serious toll from the average orchard crop.

The trees were put in by a former owner at a time when Bens and Ganos were believed to be the apples of Missouri. When they came into good bearing the present owner bought the orchard. It had better than twenty odd varieties, some only five to ten trees, some 100 to 200 of each variety. The first type to ripen was Early Red June, the last June, followed by Early Harvest, Duchess, Maiden Blush, Jonathan, Grimes Golden, leading up to the standard early and late winter varieties; this gives apples for Boonville consumers for a period of nearly nine months.

The total amount of barnyard manure produced in the Boonville community is purchased by this orchard man, hauled to his farm as soon as produced, there it is piled up awaiting a suitable time for scattering under the orchard trees. He has a regular system of fertilizer rotation whereby his heavy-bearing trees are fed necessary soil food every three or four years. This is a part of the secret of his quantity yields.

This successful orchard man tries to give his trees and his fruit as great care and attention as does the grower and breeder of choice, fancy Jersey or Guernsey dairy cows. Each one of his trees is pruned and, at the proper time, he makes good use of his power sprayer. This accounts for his trees bearing good quality of clean, desirable apples. This man showed the writer certain twenty-five-year-old trees, that, in 1917, bore him from 25 to 27 barrels of commercial fruit, per tree. To a novice, the same trees seem, this season, to hold 100% crop, while the district is credited with only 35% of a crop.

He Sells to Consumer

The local market is utilized to the fullest extent in disposition of the harvested fruit. Each day's drop is picked up that same day, and divided into first drop, second drop, and third drop quality, and Boonville supplies a market for each class, where it is utilized before the apples can deteriorate or spoil. A power cider press tells how some apples are pressed into cider with a remunerative return to the grower.

The extra fancy, fancy and choice apples are picked from the tree when they are just in the prime of maturity, insuring color, size and flavor. These are put up in attractive containers, and, when Mr. Jaeger comes on the street with these apples, consumers have a keen rivalry to see who will obtain them before the supply is exhausted for that day.

When this man decides to make an exhibit at a county, district or state fair, competitors become discouraged, because his record for winning blue ribbons is an enviable one, and his rivals for prizes know he has a choice exhibit that rarely fails to attract the eye of the judge and win meritorious award.

While the orchard does not represent the varieties that Mr. Jaeger, himself, would plant, yet he has taken what another man left and made a most commendable success as to quality of fruit and quantity, per tree, in production.

The writer feels that this man has made a remarkable success in his plan of local marketing. It is said that the packer now utilizes every particle of the hog but the squeal. We believe we can truthfully say that this orchard man puts to some economic use practically every apple that reaches maturity in his orchard.

His method has cut down lost motion to a minimum, insures the feeding of his trees to the full amount needed for maximum production, and quality, and has developed a plan of local marketing that is seldom if ever exceeded. For this reason, the ten-acre orchard on the Jaeger farm, year by year, gives the highest net profit returns of any unit orchard that he has seen in all the Ozarks.

Champion Dependable Spark Plugs



JAS43, $\frac{1}{8}$ —18. Price \$1.00
Champion Heavy Duty

Wins Out In Government's Severe Shock Test

At the factory of the Chalmers Motor Car Company, of Detroit, Michigan, the United States Government was conducting a most exacting ignition test of the Holt-Caterpillar Tractors, used in war-work for hauling cannons, caissons, etc.

With motor at high speed under heavy load, the spark plugs at sizzling were doused with a bucket-full of cold water.

This most severe test had not the slightest adverse effect, the operation of the motor continued perfectly, not a spark plug "missed" even temporarily.

Every motor car owner has, in this test, irrefutable proof of the hardness and efficiency of Champion Spark Plugs.

There is a Champion Spark Plug for every type of motor car, motor truck, tractor, motorcycle and stationary engine.

Champion Spark Plug Company, Toledo, Ohio

Champion Spark Plug Co., of Canada, Limited, Windsor, Ontario

The Jefferson RICHMOND, VA.

Most Magnificent Hotel
in the South

EUROPEAN PLAN

400 Rooms 300 Baths

Rooms Single and En Suite, With and Without Private Bath. Turkish and Roman Baths. Spacious Sample Rooms. Large Convention Hall

RATES—\$1.50 PER DAY AND UP

O. F. WEISIGER, Manager

The Cheapest Way To Pull Stumps

No horses needed with a *Kirstin Pulley*—no extra help required. One man alone pulls biggest stump in 4 to 10 minutes. The wonderful *Kirstin One-Man Pulley* pulls little, also brush, hedges and trees. Cuts land clearing cost way down. Costs less to buy—less to operate. Weighs less—has greater strength—more power.

**Get Our Big
FREE BOOK**

Tells how to clear land quickly and economically. Guides you at every point. Worth many dollars to any farmer. Also get special proposition.

**Kirstin One-Man
Stump Pulley**

Works on wonderful leverage principle—gives one man giant's power. Its six speeds and patented cable take-up save time, cable and machine. All steel—three years' guarantee against breakage. Pulls acre from one anchor. Sold on 30 days' free trial—no money in advance. One man style or HORSE POWER. Shipment from nearest distributing point saves time and freight. Write for FREE BOOK and Special Agent's Proposition—TODAY.

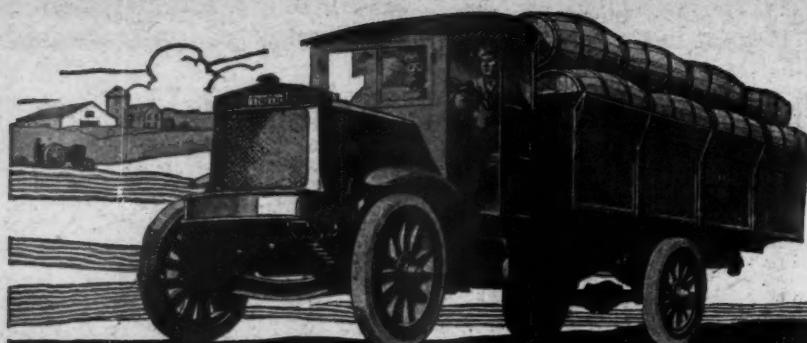
A. J. KIRSTIN CO., 2903 Lud St., Escanaba, Mich.



New Free Book

World's Largest
Makers of
Stump Pullers!

Kindly mention American Fruit Grower when writing advertisers



Traffic Truck

4,000 LBS. CAPACITY

1395

The Truck of All Work

The jobs that a Traffic Truck can do on the farm are too many to count. It provides the speediest, most economical means of taking your produce, milk and livestock to market and bringing home supplies from town. Hauling material around the farm, dragging roads, etc.

Always on the job—saving time and labor—making money for you with its speed and big capacity. Consuming only when it works and doing more work than three horse teams at that.

Traffic are as easy to handle as most passenger cars. Cost little to operate and maintain. Amply powered for full loads and all road conditions—strong, sturdy, dependable.

Investigate the Traffic—the biggest truck value on the market today. A safe investment that will return steady dividends. If there is no Traffic dealer near you, write us. Traffic wants a dealer in every town and village.

Traffic Motor Truck Corporation, St. Louis, U.S.A.

Chassis 81395 f. o. b. St. Louis

Order Armour's Fertilizers Now!

PEACE stops fighting, but not feeding. Our armies, at home and abroad, our Allies and ourselves, must be fed. MORE food must be produced in 1919. Lack of fertilizer will cut down your production. Labor, cars, raw materials are all limited. Fertilizer factories must begin shipping at once, to move even a normal tonnage by planting time.

Protect Yourself—See Our Dealer—
Haul It Home Now

Armour Fertilizer Works

General Offices: CHICAGO

Atlanta, Ga.
Nashville, Tenn.

Baltimore, Md.
Greensboro, N. C.
Louisville, Ky.

Jacksonville, Fla.
New Orleans, La.

2888

Kindly mention American Fruit Grower when answering advertisements



SMALL FRUITS FOR PLEASURE & PROFIT

By S. J. Bole

The Pruning of Bush Fruits

THE BEST time to prune bush fruits is in February and March—February in the south and March in the north. Now and then a writer will advocate pruning in the fall, but the blackberry and raspberry canes often suffer severely from winter injury when thus pruned. Currants and gooseberries do not winter-kill, but the snow and ice of winter may break these down somewhat. It is, therefore, better to leave the pruning until after

first summer which bear fruit the next season and then die.

Like the brambles, currants and gooseberries are produced from winter buds which are always borne on one-year wood, that is, wood that grew during the previous season. Unlike them, they do not die after fruiting the second summer but continue to send out branches and increase in size for several years.

Reasons for Pruning

Pruning consists in removing a part of the whole of a plant from its main body, row and its objects are:

1. To produce the shape that will enable the plant to stand upright without stake or trellis.
2. To aid in cultivation, spraying and harvesting.
3. To aid in the control of dangerous insects and diseases.
4. To produce vigorous bearing wood.
5. To remove dead, dying and diseased wood.
6. To thin the fruit and increase quality.
7. To improve the appearance of the plantation.

The correct shape is secured by keeping the plants by pruning into a certain restricted area. To illustrate, blackberries, currants and gooseberries are kept in hills and not allowed to get thick in the hill or spread by layering or suckering. Blackberries and red raspberries are confined to a hedgerow two or three feet in width and high enough to pick the fruit most readily. A stake or trellis is necessary only in case of dewberries and loganberries which run on the ground in a wild state.

By confining the wood growth of bush fruits to a restricted area, the cultivation, spraying and harvesting of the fruit is more easily and effectively accomplished. Because the wind and sunlight can better penetrate into the bushes and because



A Currant Bush Just After the Annual Spring Pruning

Twenty-eight of the young sprouts have been removed, and also that part of the bush that has borne three crops.

the severe freezing of winter is past and before the growth starts in the spring.

Pruning Tools

The necessary tools for pruning the bush fruits are hand shears and long-handled pruning shears. The spring and summer pruning of the brambles is done with the hand shears, and the old canes are removed with the long-handled shears. Those that are light in weight and having but one cutting blade are best for removing the old canes. The canes should be cut off as near the ground as possible and then should be pulled out with the shears into the space between the two rows. This throws two rows of canes into one space and the canes are then readily gathered into piles by means of a long-handled pitchfork. Much of the pruning of currants and gooseberries can best be done with the long-handled shears.

Fruiting Habits

One can best understand how to prune bush fruits by first making a careful study of their fruiting habits and length of life. In case of the brambles, the flowers are produced on summer shoots which develop from winter buds. Within these winter buds are seen the tightly folded and undeveloped stem, leaves and blossoms. As these winter buds burst in the spring and growth takes place, the stem elongates, the leaves enlarge and the blossoms develop into the new fruiting wood. The roots of the brambles are perennial, living year after year, but the canes are biennial, living but two years. Except in case of the everbearing kinds, the roots send up canes which develop fruiting or winter buds the



A Gooseberry Bush Before the Annual Spring Pruning

That part of the bush that has borne fruit the previous year should be removed. Also the branches that have no fruit and all the new wood except about three canes.

spraying can be done more readily, dangerous insects and diseases can be better controlled.

The production of vigorous bearing wood is in part due to soil, culture and variety, but it is also greatly aided by pruning. It is far better to have a dozen canes in

FOR
OF IT

fruits

fruit the next

ants and gooseberries in winter bud one-year wood, during the previous summer, they do not stand summer but branches and leaves.

Pruning

Pruning a part of its main body a

one that will not right without

spraying and

of dangerous

bearing wood

and disease

and increase in

appearance of

ured by keeping to a certain state, black raspberries are kept thick in the bearing or sucker berries are cut or three feet apart to pick the fruit. The trellis is never used for berries and logs are round in a

growth of bushes in the cultivation of the fruit is accomplished by cutting the right can be done and because the

Whether or not the brambles are laid down for winter protection has much to do with the method of pruning to use. Pinching or heading back and thinning out the young shoots in summer is not resorted to, if the canes are to be covered. In this case, the canes are allowed to grow more thickly, more slender and more free from branches or laterals. Such canes will bend over without serious breaking or splitting and lay close to the ground. When raised in the spring these canes will be too weak and slender to grow upright and support a load of leaves and fruit. Consequently, a trellis must be used with this method of pruning. The directions for pruning which follow, however, are for canes not to be laid down for winter protection.

The same method in general applies equally well to black, red and purple raspberries and blackberries. All blossoms should be cut from the canes the first summer. If the canes are vigorous, about one-quarter of a crop is left to mature the second summer. If the plantation does well, a maximum yield will be reached during the second or third harvest.

There are four distinct and different parts to the pruning of a bearing plantation. About the time the berries are ripening and when the young canes are from 18 to 24 inches in height, they are pinched back. This is done with the fingers or a pair of hand shears. As soon as the growing tender tips are removed, the lateral buds will start and a treelike bush that will stand upright without support develops. The plantation has to be gone over two or three times because the canes do not all mature together.

The second step in the pruning is the removal of the old canes. They should be cut as near the ground as possible and removed at once and burned.

The third step consists of thinning out the canes in the hill and applies especially

hill of currants than to have seventy-five or one hundred. It is better to have from one to three vigorous canes in a hill of blackcaps than to have a dozen. Thinning the number of plants is just as important as thinning the fruit by pruning off the laterals. It is the best for the plantation, if the fruiting canes of the brambles are removed as soon as the fruit is harvested. The canes are then more readily cut and handled and it is easier to control disease and insects. In this case, the canes should be burned at once.

The amount of thinning by pruning off the laterals will vary with the age, vigor and variety. Frequently, in case of blackberries, three-fourths of the fruiting wood may be removed to an advantage. Only enough fruit should be left to fully

black and purple caps. It is usually done at the time the old canes are removed. At this time all the new canes are removed except from two to four of the most vigorous and healthy ones. This throws all the strength into these few canes for the remainder of the season and insures large, vigorous canes.

In February or March, the laterals on the fruiting canes are cut back to stubs from 8 to 18 inches in length, depending on the number, size and vigor of the canes.

The pruning of brambles in a fruiting plantation, therefore, is seen to consist of four distinct and different parts, which may be done at four different times or combined more or less. To sum it up again in a single sentence, the pruning of brambles consist: first, to pinch back the young canes when they are from 18 to 24 inches high; second, to remove and burn the old canes as soon as through bearing; third, to thin the young canes down to from two to four in a hill; and fourth, to prune the laterals to stubs in February or March from 8 to 18 inches in length. Growers, who follow these directions, will have pruned their brambles successfully—a very important part of bush-fruit culture.

Method of Pruning Currants and Gooseberries

Currants and gooseberries have a similar habit of growth and are pruned quite alike. In planting these bushes, no pruning is necessary unless it is to head back very vigorous shoots. In case of a two-year-old plant, all but about three shoots should be removed. The future pruning of the currant is easily followed and readily done. During the three years following the setting of the plant, only three of the most vigorous young canes are left when pruned in the spring. The original shoots and those left each year should be allowed to fruit for three years, after which they should be removed at or near the surface of the ground. If three shoots are left each year, there would be at the beginning of the fourth summer twelve in each hill. The three of these which bear a third crop the fourth summer should be removed the following spring. The pruning of bearing currants, therefore, consists of but two steps as follows: first, removing all one-year wood except three shoots each spring; and second, the removing of each branching shoot after it has produced three crops of fruit. The directions should be followed as closely as a grower's judgment and experience warrant.

Of course, the older bushes in the hill become well branched and it is upon these branches, especially the one-year wood, that a large part of the fruit is borne. The pruning of the gooseberry, as we have said, is very similar to that of the currant. One needs heavy gloves as well as the long-handled shears to prune gooseberries.



Showing Growth Before Pruning

mature on the plant without drying on the vines and stunting the growth for the next season. Each grower has to learn by experience how much fruiting wood to remove in thinning the fruit.

Method of Pruning the Brambles

The way bush fruits are planted determines somewhat the method of pruning to use. Currants and gooseberries should be planted in hills and not allowed to run together. Blackberries and raspberries may be grown in hills or hedgerows. Since they yield about three times as much as in the hedgerow as they do in hills, they are generally planted closely or allowed to run together in a solid row.

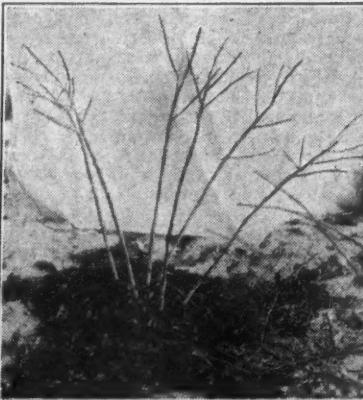
Whether or not the brambles are laid down for winter protection has much to do with the method of pruning to use. Pinching or heading back and thinning out the young shoots in summer is not resorted to, if the canes are to be covered. In this case, the canes are allowed to grow more thickly, more slender and more free from branches or laterals. Such canes will bend over without serious breaking or splitting and lay close to the ground. When raised in the spring these canes will be too weak and slender to grow upright and support a load of leaves and fruit. Consequently, a trellis must be used with this method of pruning. The directions for pruning which follow, however, are for canes not to be laid down for winter protection.

The same method in general applies equally well to black, red and purple raspberries and blackberries. All blossoms should be cut from the canes the first summer. If the canes are vigorous, about one-quarter of a crop is left to mature the second summer. If the plantation does well, a maximum yield will be reached during the second or third harvest.

There are four distinct and different parts to the pruning of a bearing plantation. About the time the berries are ripening and when the young canes are from 18 to 24 inches in height, they are pinched back. This is done with the fingers or a pair of hand shears. As soon as the growing tender tips are removed, the lateral buds will start and a treelike bush that will stand upright without support develops. The plantation has to be gone over two or three times because the canes do not all mature together.

The second step in the pruning is the removal of the old canes. They should be cut as near the ground as possible and removed at once and burned.

The third step consists of thinning out the canes in the hill and applies especially



The Canes After Pruning

Those branches that are seen growing on or close to the ground should be pruned off to prevent their taking root. The Houghton variety is extremely bad in its rooting on the branches and growing into a tangled mass. While the pruning of the gooseberry should be very similar to that of the currant, the important thing is to remove the branches that are near the ground and might take root and to avoid opening up the interior of the bush to the direct rays of the sun.

BANANAS FROM JAMAICA

The United Fruit Company, Kingston, Jamaica, estimates that it will ship from Jamaica to the United States this year, 4,000,000 bunches of bananas if they can procure shipping facilities.

TALKS ON Nitrogenous Fertilization

Number 2

"Seeing is Believing"

Mr. William Schmittkons, Amherst, Ohio, writes:

"I have used Arcadian Sulphate of Ammonia in my apple orchard at the rate of about 5 pounds each for mature trees with very satisfactory results.

"Trees which were ailing, and apparently about ready to die, were restored to health manifested by vigorous wood-growth and foliage. Over-bearing trees which set too much fruit were enabled to carry all the fruit set to maturity.

"Trees which were bearing a normal crop of fruit every alternate year were enabled to produce a crop of fruit every year.

"My orchard is handled under what is known as the 'sod mulch' system.

"The application of the Sulphate of Ammonia caused a much heavier growth of grass which could be used for mulching."

ARCADIAN Sulphate of Ammonia is the well-known standard article that has done you good service in your mixed fertilizers for years past. Especially kiln-dried and ground to put it in splendid mechanical condition. Ammonia 25 1/4% guaranteed. Made in U.S.A.

For Sale by

Branches of Armour Fertilizer Works, Swift & Company; also Empire State Chemical Company, Athens, Ga.; Home Fertilizer and Chemical Company, Baltimore, Md.; Independent Packers Fertilizer Co., Columbus, Ohio; Hopkins Fertilizer Co., New Albany, Ind.

For information as to application, write

Medina, Ohio
Athens, Ga.

The *Garrett* Company

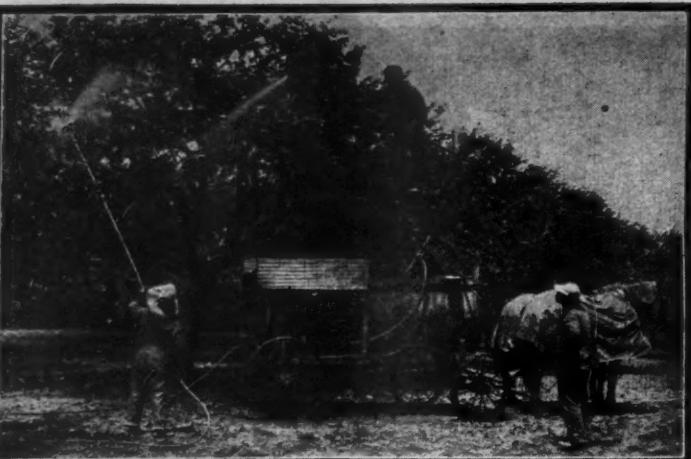
New York
N. Y.

AGRICULTURAL DEPARTMENT



Write The Barrett Company, Agricultural Department for these free bulletins. Order by number.

- No. 81. "Directions for Applying Arcadian Sulphate of Ammonia."
- No. 83. "The Production of Sulphate of Ammonia for 1915-16."
- No. 84. "Sulphate of Ammonia: Its Source, Production and Use."
- No. 85. "Fertilizing the Apple Orchard."
- No. 86. "More Wheat."
- No. 87. "Let Us Help You to Study Farming."
- No. 88. "Potato Production."
- No. 89. "Sulphate of Ammonia for Vegetables."
- No. 90. "Which Source of Nitrogen is Best?"
- No. 91. "Sweet Potatoes and Yams."



First To Build Sprayers

A maker of pumps since 1848, this firm was the first to build sprayers for the commercial fruit grower. Goulds Engineers have the benefit of this long experience, gained from the very beginning of fruit spraying.

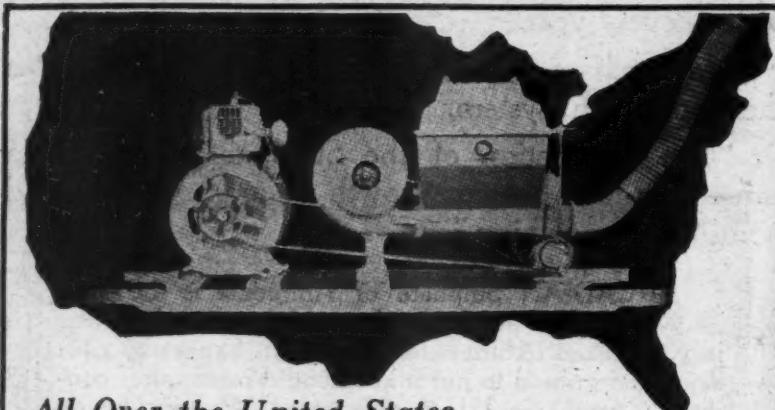
GOULDS SPRAYERS HAND AND POWER

are made in more than 50 styles. Our Service Department will help you to select the right one, and we positively guarantee it to satisfactorily perform the work for which we recommend it.

Fig. 1662. Goulds "High-Speed" Sprayer with Flexible Coupling for Direct-Connection to Engine. Service. E. W. Jamison, Salem, Va., says: "We have used your make of spray pumps for 15 years and consider them as good if not the best made."

Order your sprayer now; have it ready when needed. Write for our book, "Hand and Power Sprayers."

The Goulds Mfg. Company
Main office and works
Seneca Falls, New York



All Over the United States

The Niagara Duster

has proven to be so effective and economical in the control of insect pests and fungus diseases that the Niagara Dusting Method has not only been adopted by the larger commercial growers of apples and small fruit in every fruit growing section, but also by the walnut growers of California, the peach growers of Georgia, strawberry and market gardeners of New Jersey, the cotton growers of the south and by park superintendents in many leading cities.

The Niagara Duster without exceedingly fine dusting material would be practically useless. Niagara Dusting Sulphur has been largely responsible for the universal popularity of the dusting method. It is ground into such minute particles that it is the finest powdered sulphur manufactured. For best results, it is always necessary to use Niagara Dusting Sulphur with the Niagara Duster.

For Liquid Spraying and Dormant Dusting, we are quoting attractive prices on Niagara Soluble Sulphur Compound, the original Soluble Sulphur in powder form. We have a plentiful supply now ready for delivery.

"DON'T PAY FREIGHT ON WATER"

It will pay you to send today for our free booklet describing our full line of dusting machinery, special dusting mixtures, all kinds of spraying materials and sulphur.

NIAGARA SPRAYER COMPANY, 54 Main St., Middleport, N.Y.

Kindly Mention American Fruit Grower when writing to Advertisers

Reviving Old Fruit Trees

By Sylvanus Van Aken, New York

IT IS only necessary to look around during the summer months in settled fruit sections, to ascertain what a vast quantity of gnarled and practically worthless fruit trees there are in existence. Whole orchards may frequently be seen in which many of the trees are badly infested by insects or fungous diseases. These, coupled with starved soil, have succeeded in bringing what ought to be valuable trees to premature old age. Unfor-

may be badly crossed or interwoven one with another.

Cultivation Often Needed

Having given the branches a thorough overhauling, supplement the good work on the roots. In many orchards the grass has been allowed to grow over the roots and right up to the trunk of the trees. Although this is detrimental to them in all stages of their growth, its bad effect are perhaps not so manifest when the trees are past their youth. Their starved appearance and small, badly shaped fruit are usually attributed to other causes rather than the ill effects of the grass growing immediately over the roots. The turf should be skinned off several inches and the surface of the soil beneath very gently forked over to a depth of a few inches. Even where grass is not present this light working over is beneficial.

After the surface has been broken up in this way as far from the trunk of the tree as branches extend, a dressing of partially decayed manure, several inches thick, may be spread over the whole. Anything of manurial value, if applied during the dormant season in a moderately thin coating, is almost certain to do good. Clearings from ditches and ponds, particularly on rather light soils, have given excellent results.

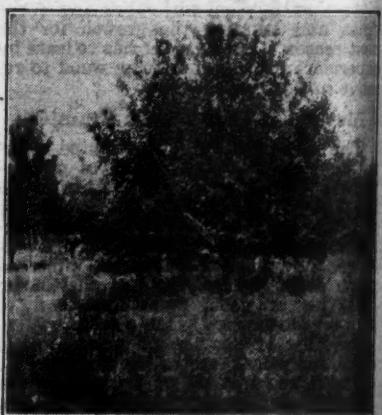
Another method of manuring old trees which has answered very well, is to make a number of large holes with a crowbar at intervals of, roughly estimating, 18 inches all over the area occupied by the roots. These holes are kept well filled with strong liquid manure, principally drainings from the stables and farmyard, all the winter. Trees like every other living thing must be

A 45-year Baldwin tree that needs much dead wood removed and also some dentistry done to the trunk, and some top removed. Taken on my home farm September 30, 1918.

tunately, during the winter season, the best time for remedying this undesirable state of affairs, the trouble is not nearly so apparent. Too oftentimes a careless owner remembers it only when it is brought vividly home to him during the busy days of summer.

Where trees are actually old and entirely worn out, it is, of course, impossible to improve them to any extent. In the majority of orchards which have been neglected, however, the trees have only reached that age when they ought, with proper treatment, to be bearing crops of high-class fruit.

The winter is the best time of year to undertake this work. Both roots and branches will need attention, and the latter should be dealt with first. The removal of the dead wood must be the primary work. In cutting out dead branches cut down to live wood, otherwise the wound will not be able to heal properly. If this cannot be done, the branch should be cut as close to the limb or trunk as possible. After all dead wood has been removed, very badly cankered branches should next be attended to. Where the disease has nearly circled a branch, it is useless to try to save it beyond the point where the disease is present. If possible, without unduly thinning the tree, any badly cankered branches should be cut right out at the base. Small canker wounds should be pared out clean, right down to the living tissue, with a sharp knife, the wound



A seven-year-old Jonathan full of fruit, in the up-to-date young orchard of Wm. A. Vandevere, Port Ewen, N. Y. September 21, 1918.

properly fed and cared for if they are expected to remain in a healthy and profitable producing condition.

No Attention for Five Years

One neighbor threw at me the question: Give me any information that you care to on the treatment of apple trees that have not had any attention for five years.

This man, having only a few trees, and being an amateur not familiar with orchard culture, my answer took on the form of a question like the following: I have just taken several new members into my family. They have not had proper attention for a long time. What can I do for them? You can see that we could not even guess at an answer. One of these new people might need nothing but a hair cut and a good meal to start him at work. Others may be sick or deformed, or so badly out of condition that it will take weeks to set them right. Just so with the apple trees. They were old trees and had to be set before any reasonable answer could be given to the above question.

Having discovered that they were old trees, next, have they made any recent growth? Do they bear any apples? Are they covered with scale? All these things should be known if any treatment is to be suggested. Usually neglected trees stop growing or make very little new wood. One can easily distinguish the new wood by examining the ends of the twigs. The new wood is smooth and light-colored, and you can easily find a little bunch or joint showing where this season's growth began.



A Kieffer pear tree seven years old, in the up-to-date orchard of Wm. A. Vandevere, Port Ewen, N. Y. Taken September 21, 1918, when loaded with fruit.

sterilized with some form of creosote. This same treatment may also be given to wounds caused by the removal of branches.

It frequently happens that very little if any more thinning is needed. Sometimes it is necessary to remove branches that

Turn Stump Land Into Money

Clear your stump land cheaply—no digging, no expense for teams and powder. One man with a K can rip out any stump that can be pulled with the best inch steel cable.

Works by leverage—same principle as a jack. 100 pound pull on the lever gives a 48-ton pull on the stump. Made of the finest steel—guaranteed against breakage. Endorsed by U. S. Government experts.



HAND POWER
K Stump Puller

Write today for special offer and free booklet on Land Clearing.

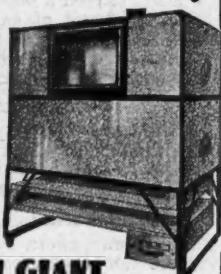
Walter J. Fitzpatrick

Box 2
182 Fifth Street
San Francisco
California

No Stump Too Big

A Real Farm Necessity

Get This **SMOKE HOUSE**



Don't sell all your hogs and pay big butcher bills. Save money by your own use and smoke hams, bacon, sausages in the National Giant Smoke House. This wonderful smoke house is perfect for indoor and out-door. Runs on sawdust, coals and little bark for smoke.

NATIONAL GIANT PORTABLE **SMOKE HOUSE**

In a great success. After smoking meats use for store house. Made in 3 sizes of heavy galvanized steel. Fireproof. Guaranteed.

Send for FREE Book

which gives prize-winning recipes for curing hams, bacon, sausages, etc., also gives special low prices. Write today now.

PORTABLE ELEVATOR MFG. COMPANY
316 McClintock Street Bloomington, Ill.

HYBRIDIZED POTATO SEED

From the Seed-Balls—Headquarters Stock

50 New Varieties can positively be grown from one packet of Hybridized Potato Seeds. Every hill will be different. Growing new and distinct Seedlings from the Seed-Ball is intensely interesting. They will be the greatest curiosity of your garden. This seed will produce innumerable new kinds, colors, shapes, sizes and qualities. Some may be of immense value. Packet, with full directions for growing, 15c.; 4 for 50c.; 10 for \$1.00. Our 1919 Seed Catalog of Choice Selected Seeds sent FREE with each order of Potato Seed. Send orders at once—Stock limited.

SMITH BROS. SEED COMPANY, Dept. D, Auburn, New York

RO-SAN Indoor Closet

The original comfortable, healthful, convenient chemical closet. Takes the place of all outdoor toilets, where germs breed. Be ready for the long, cold winter. Have a warm, sanitary, comfortable, odorless toilet right in the house anywhere you want it. Don't go out in the cold. A boon to invalids.

GUARANTEED ODORLESS

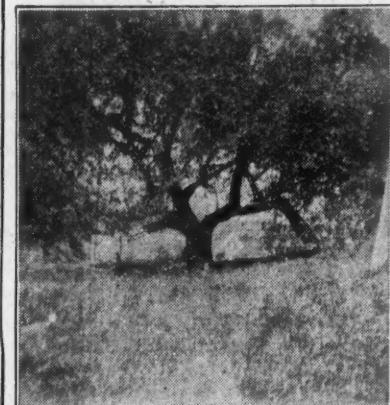
The germs are killed by a chemical in water in the container. Enjoy once a month as easy as sakes. Closet guaranteed. Thirty days' trial. Ask for catalog and price.

ROWE SANITARY MFG. CO.
No. 55 1/2 3rd St., Detroit, Mich.
Ask about Dr. S. S. Washington—
Hot and Cold Running Water
Without Plumbing.

FLASHLIGHT
GIVEN
OR CHOICE WATCH,
CAMERA OR RIFLE
for selling only 30 packs
ass'd. Vegetable Seeds at
10c per large pack. Easy to
sell. EARN BIG MONEY or premiums. We
trust you with seeds until sold. Address:
AMERICAN SEED COMPANY
Lancaster, Pa.
Box 1

When old trees are neglected very little new wood is made, and a number of the old limbs die. The trees need feeding and pruning to stimulate new growth. Cut out all the dead limbs and those on the inside of the head which grow to the center. I would not advise any amateur to cut out any of the sound limbs without consulting some good fruit grower. The trees must be fed. If they are in sod put on a good coat of manure and in the spring plow or spade sod and manure under and give good culture during the season. If one cannot get manure use a strong fertilizer freely. The chances are that such trees are well plastered with the scale, and it will pay to give them a thorough soaking with soluble oil or lime-sulphur as directed by the manufacturers.

Some old trees have to be dehorned or severely cut back. On many eastern farms are to be found orchards of Baldwins or Greenings which were planted fifty or



A. R. J. Greening that needs renovation. This tree is over fifty years old and belongs to the undersigned. Picture taken September 30, 1918.

more years ago and have been neglected. Some of them have about stopped growing, or have thrown out a lot of water sprouts on the lower limbs. Such trees usually stand in a poor sod, and have not been fed, pruned or sprayed for years. Even with this neglect many of them still produce considerable fruit, such as it is. They are usually high-headed and the first step is to stimulate them into new growth and make a new head nearer the ground. This is done better by cutting off a reasonable amount of top, which forces new growth nearer the ground.

An operation of orchard culture which is rarely practiced in the home orchard, but very essential to the development of good-formed trees, is pruning. Unless a tree is given a great deal of attention by pruning it often becomes very crooked and unsymmetrical. Before pruning a tree the grower should have a clear understanding of the principles of the particular trees he wishes to train so that when he removes a branch there will be some good reason for it. Some of the most important reasons for pruning that I would mention are as follows: All crossing limbs should be removed. Spraying being quite an item in the expense of an orchard, and with all superfluous limbs removed before the application, less material will be needed. Second, prune to encourage the production of fruit rather than wood. Third, prune to prevent the lower limbs from hindering cultivation; the upper ones from growing out of easy reach for spraying and picking. Fourth, prune to prevent the "off year habit" in trees. Fifth, prune to correct too compact or too spreading growth of top.

If the grower strives to master the art of pruning, his success will be based on the observance of the above-mentioned rules, and in order to be competent to attempt to revive his old neglected trees, he should learn the above five facts quite well.

YOUR HELP WANTED

Editor AMERICAN FRUIT GROWER:

A plum tree had been growing for fifteen years without ever bearing, until one season it was literally covered with bloom, to the delight of its owners. So anxious were they that no harm should come to it from frost, as the place where it was growing was in the mountains of Western North Carolina, that they contrived to cover it each night until settled temperature, and they were rewarded by a bountiful crop of delicious plums; but, strange to say, it never bore again but immediately died down to the root.

Can any of your readers suggest a reason for this unusual occurrence?

A. M. CAMPBELL, North Carolina.



What are you paying for apples?

Apples of all kinds and varieties, from windfalls and culls to "extra fancy," have brought high prices this season. Doesn't it make you wish that you had some bearing apple trees to supply your table or to sell at a profit?

Prices of good fruit—good in color, size and quality—will surely be high for many years after the war—even higher than at present, while prices of farm crops will not remain at the present level more than a few years after the war.

The man who starts an orchard now will have good cause for congratulating himself a few years later upon his foresight. A little thought now is likely to mean substantial profit by and by. Now whether you plant for home or commercial purposes, it is of vital importance to start right. If you plant the wrong kind of varieties now you may not find it out for at least three years. It's easy if you know how. Let us help you. Send today for our

New free fruit book

It gives valuable boiled-down information on all kinds of fruit, what and when to plant, how to choose a good site, what varieties to select, planting distances, etc., also prices direct from nursery to planter.

Neosho

Nurseries Co., Neosho, Mo.

Successors to Wm. P. Stark Nurseries

When you become our valued customer we supply concise, complete reliable information on the care of your trees and plants. We keep in touch with you so as to help you to secure "growing satisfaction." We have no agents and pay no commissions to anyone, but sell direct from nurseries only. Start now by mailing the coupon below.



Neosho Nurseries Co., Box 22, Neosho, Mo.

Please send books as checked:

.....Book of Fruit Trees and Plants free.

....."Inside Facts of Profitable Fruit Growing" (10c inclosed).

....."How to Beautify Your Home Grounds" (10c inclosed).

Name _____

Address _____

(Please give County and Street or R. F. D. number.)

"Inside Facts" is a complete guide on fruit-growing—80 pages and illustrations. Price 10c. Send for this book, too.

Fruit Advertisements
in the Magazines

No better proof of the value of advertising could be offered than the appearance of fruit advertisements in all the national magazines. Such advertisements insure a widely increased consumption of fruit on the part of the general public.

"Eatmor" Cranberries

A very striking series of advertisements by the American Cranberry Exchange, a growers' organization, appeared in the women's magazines and the daily papers this fall. A number of sugar-saving recipes for the use of cranberries are featured in these advertisements. An excellent idea while America was on a sugar ration. This is the kind of advertising that makes the consumer realize very vividly the value of cranberries.

Sliced Hawaiian Pineapple

Wilson Co., of Chicago, have in the magazines this winter some very artistic advertisements in colors extolling the merits of this fruit. They give one a craving for pineapples and whet the appetite for this delicious fruit. Pineapple pie is now selling in the popular-priced restaurants for 5 cents per cut, while apple, peach, pumpkin and other native fruit pies are all 10 cents.

Dromedary Dates

Are advertised by Hills Bros. Co., New York. We are told all about Dromedary dates and offered a book of recipes. Very striking pictures of camel trains in the desert accentuate the foreign charm of Dromedary dates, and realistically give one an impression of travel in the desert.

Sunkist Oranges

These advertisements, which have become familiar to all of us, are so artistic that one feels the unequalled pleasure of breakfast where Sunkist oranges are used.

Fruit Exchange Advertisers

The Northwestern Fruit Exchange advertises the Skookum Apple, the Florida Citrus Exchange advertises Sealdew Grapefruit and Oranges; Libby, McNeil & Libby draw our attention particularly to Libby's Peaches. The Jello Company announce that they make 11 flavors for their product from fresh fruit juices.

Sunmaid Raisins

These are advertised by the California Associated Raisin Co., Fresno, Cal. Haven't you noticed how plentiful raisin bread, raisin buns and raisin pie have become since the luscious picturing of these products?

Big Y Apples

The Yakima, Wash., Fruit Growers Association is using national magazines for excellent advertisements of Big Y Apples. The artists and copy writers have produced some first-rate advertisements which are sure to increase the consumption of apples and especially of the Big Y brand.

Diamond Brand Walnuts

The Literary Digest carries a page advertisement of Diamond Brand California Walnuts in the December issue, and we venture to say that many a Christmas dinner was furnished with walnuts as the direct result of seeing this advertisement.

Very Valuable Publicity

Look over these advertisements and you will find that they make a very delightful picture book with savory reading matter. Their high artistic quality shows that the expense of producing them must be great. The increasing use of them shows that results more than offset this initial cost. The public are being introduced to them in a most beguiling manner, and are going to patronize such brands as are placed attractively before them.

Human nature is pretty much alike in the fruit grower and the citizen. If merely to look at these tempting advertisements makes you long to sample the delicious fruits, and we know that it does, it also makes the general public long to do the same. It is up to the fruit grower to see that this craving does not go unsatisfied.

EDISON SAYS

"The only thing needed to insure a year of great prosperity is a determination on the part of every business man, big or little, to go ahead with absolute confidence in the future."

An Important Engine
Announcement

IN announcing to the farmers of America our new 1½ H.P. "Z" — which successfully uses

KEROSENE

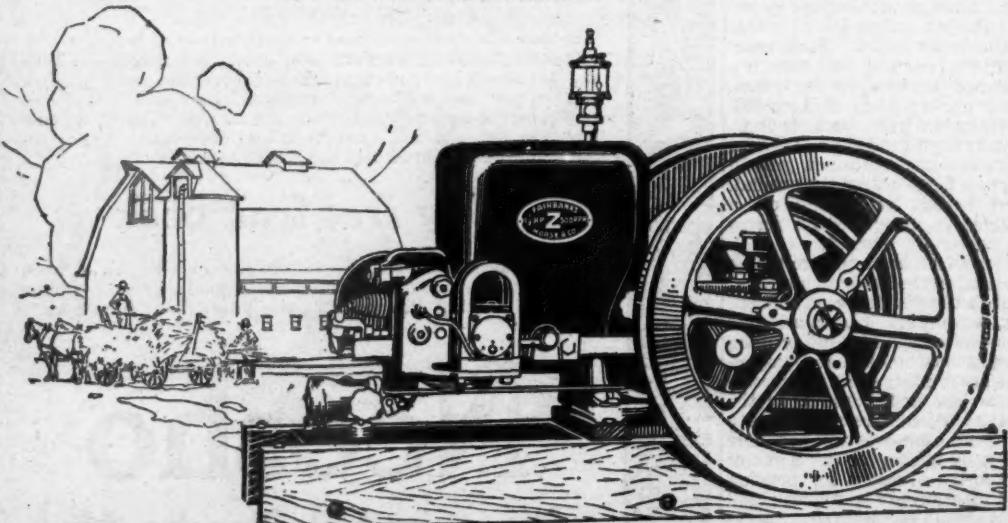
— we complete a line of kerosene engines — 1½ H.P. to 15 H.P. — which merits the most critical investigation. When over 200,000 farmers back their judgment by buying over fifteen million dollars worth of engines — bearing this name plate — it quite firmly establishes the one answer for all farm engine needs.

There's a "Z" engine dealer near you — have him tell you why he adds his name to ours in backing the "Z" after comparing it with all others.

Throttling Governor — Built-in Oscillating Magneto.

Prices — 1½ H.P. \$61.00 — 3 H.P. \$100.00 — 6 H.P. \$179.00 —
F.O.B. Factory

Fairbanks, Morse & Co.
MANUFACTURERS CHICAGO



GET Your Cream
Separator **NOW!**

ONLY
\$2 Down
A Year to
Pay

on This Easy, Self-Earning Plan!
You won't feel the cost at all. The machine itself will save its own cost and more before you pay. We ship any size separator you need direct from our factory and give you a whole year to pay our low price of \$38 and up. Read what Alfred Geatches, North Jackson, O., says: "We are getting more than twice the cream we were before. The separator is very easy to clean and runs very easy." Why not get a fully guaranteed New Butterfly Separator for your farm and let it earn its cost by what it saves?

New BUTTERFLY

Cream Separators have these exclusive, high grade features: Frictionless pivot ball bearings bathed in oil—self-draining bowl—self-draining milk tank—easy-cleaning one-piece aluminum skimming device—closed drip-proof bottom—light-running cut steel gears, oil bathed. Guaranteed highest skimming efficiency and durability. We give 30 Days' FREE Trial — Lifetime Guarantee against all defects in material and workmanship. We ship you the size machine you need and let you use it for 30 days. Then if pleased you can make the rest of the small monthly payments out of the extra profits the separator saves and makes for you. If not pleased, just ship the machine back at our expense and we will refund what you paid. You take no risk. Write for FREE Catalog Folder now.

ALBAUGH-DOVER CO., 2249 Marshall Boulevard, CHICAGO

**EASY
TO
CLEAN**



More than
150,000
New Butterfly
Separators
now in use.

GOOD SEEDS

GOOD AS CAN BE GROWN

Prices Below All Others

I will give a lot of new sorts free with every order I fill. Buy and test. Return if not O. K. — money refunded.

Big Catalog FREE

Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses.

R. H. SHUMWAY, Rockford, Ill.

10,000 Miles

Guaranteed and
No Punctures



10
Day
Free
Trial

After ten years test by thousands of car users, Biotron Pneumatic Tires resolved the problem of tire wear, blowouts, punctures, rim cut, skidding, oil, gasoline. In short trouble-free. Written 10,000 mile guarantee. Some go to 20,000.

TRY 'EM AT OUR EXPENSE
Make no move if you don't like them. For details of most liberal, convincing Free Trial plan ever offered. Send for illustrated descriptive book.

The Biotron Mfg. Co., Dept. 122-22
1015 W. G. W. Blvd., Omaha, Neb.

Two Non-Parasitic Diseases of the Apple

By A. S. Colby, Editor of "Diseases of Fruits and Trees" Dept.

A PLANT may be said to be diseased when it exhibits a departure from the normal in structure or function or both combined. The view is quite commonly held that disease is brought on through the agency of parasitic fungi or bacteria, but this is not strictly correct since there are other important contributing causes. Plants suffering from these latter causes are said to be affected with non-parasitic or physiologic diseases, conventional terms, but sufficient for our present purpose.

Many non-parasitic plant diseases are traceable to some unfavorable environmental conditions. These might include one or more of the following: physical and chemical character of the soil as to its texture, plant food resources, deficiency or excess of water content. Unfavorable climatic influences as well as the poisonous influence of various gases near smelters and other manufacturing plants have some share in inducing diseased conditions in plants.

It is the purpose of this article to discuss two of the important and common non-parasitic diseases found in the orchard and fruit garden with suggested means of control. It should be understood, however, that much is yet to be learned regarding this group, and on that account control measures are as yet imperfectly worked out in many cases. The following diseases are discussed, stippen or bitter pit of apples, and water core of apples.

Bitter Pit or Stippen

Although it is difficult to get any reliable estimate of the damage done by this disease, it certainly ranks well up in the group of important fruit troubles. Apples are most commonly affected though pears and quinces are not immune.

The appearance of the disease upon the fruits on the tree seem almost without reason. In some seasons it is not found to exist till the fruit is mature; in other seasons it appears much earlier. Few or many apples on one branch may be affected. It is of interest to note that during the study of stippen in Australia, the X-Ray was used for the first time in plant disease investigation. It was found that the disease develops internally before there are any external signs evident.

The first outward evidence of the trouble is shown by the appearance of numerous spots, somewhat sunken, scattered over the surface of the fruit. These spots vary in size up to a quarter of an inch in diameter, are nearly circular in form and brown in color. The pits become more depressed as the fruit matures but even then the skin is not ruptured.

The affected areas directly beneath the spots are found to be dead, dry and spongy, and when these diseased places are numerous, they give a bitter taste to the apple, whence the name.

What Causes Stippen

Although it is generally agreed that stippen is not a parasitic disease, but is probably due to a deficiency in the water supply, it is by no means certain just how the trouble comes about. There may be an insufficient supply of soil water. This fact in connection with the excessive transpiration from the fruit during hot weather before all the water the fruit needs has been utilized, may result in an increased acidity in the plant cells, bringing about their death in localized areas.

It can thus be seen that orchard practices making for a steady normal growth of the fruit during the season are most likely to prevent the appearance of bitter pit. These include judicious and regular pruning, having for its aim the annual production of crops evenly distributed over the tree, and in some cases thinning of the fruit in addition. Then proper drainage, moderation in irrigation where that practice is necessary, and the use of cover crops in regulating the water supply are advised. Thorough orchard cultivation aids in several ways in insuring the most efficient root action of the tree, a prime necessity. Since diseased leaves do not carry on their usual functions of food manufacture and water transpiration, they must be sprayed to be kept healthy.

Water Core

A second non-parasitic disease quite common on certain varieties of apples, usually those maturing early in the season, is known by the expressive name of water core. Evidence of its occurrence comes from the apple growing sections of the world, particularly in semi-arid districts.

The external appearance of affected fruit seldom is a guide to its interior condition, but on cutting into the apple, numerous hard, watery, transparent areas are found in the flesh. The core is sooner or later involved and liquid is formed in the seed cavities.

While the fact that a surplus of water is found in the affected tissues is sufficient reason for the name of the disease, the reasons for this excess are not well understood. It is quite generally believed that certain environmental conditions which bear on transpiration are the chief factors in causing water core. If little water is being given off or transpired, that remaining in the outermost parts of the tree is under excessive pressure in the plant cells. Therefore, water may be forced into the spaces between the cells of the fruit, since those cell walls offer less resistance, resulting in the transparent watery areas above referred to. It should be noted that more than one cause is necessary in bringing on the disease, and it is believed that they must favor reduced transpiration and a consequent piling up of the sap unable to escape in the regular way.

Vigorous trees, especially when they are young and just coming into bearing, will often show the disease. There will seldom be a heavy crop, but a few large fruits will be produced which will be subject to water core. Conversely the disease is seldom found on trees making a poor growth.

Water Supply Important

The question of available water supply is very important. Where there is a sudden excess of water just before the fruit matures, accompanied by certain extremes in temperature, the disease may be looked for. A warm day followed by a cool night, with moisture present in sufficient quantity about the roots, will perhaps bring on some such conditions as these. The surplus water is given off by transpiration as long as the sun shines, but when it becomes dark and cool, even though water is coming up from the roots, it is transpired very little indeed and, having to be stored somewhere, is forced into the intercellular spaces of the least resisting plant cells, those of the fruit. Thus other parts of the tree are not affected. The fruits at the extremities of the branches usually suffer most, perhaps because of their exposed position.

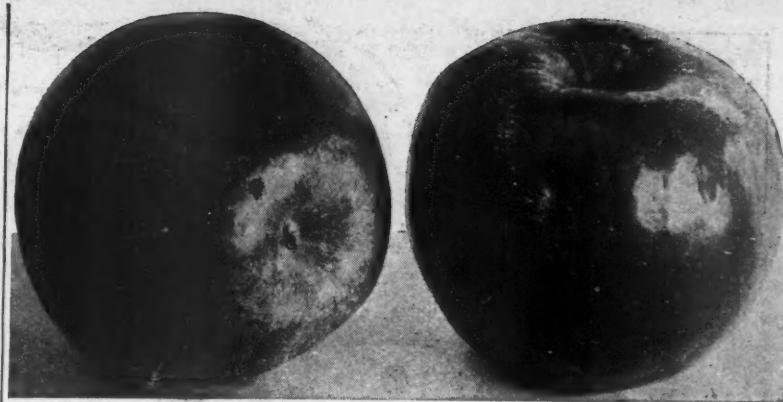
Where for any reason the leaf area of the tree is reduced, consequently resulting in a corresponding reduction of the surface from which evaporation may go on, water core may result. This may be especially noted if defoliation occurs just before the fruit matures.

The above considerations, though by no means exhausting the reasons advanced for the appearance of the disease, point the way to orchard operations looking to its control. Cultivation should be practiced intelligently and a cover crop sown early enough in the season, June-July, to be of value in removing excess moisture from the soil.

If irrigation is practiced, be especially careful at the ripening period of the fruit. Proper drainage must be provided. The pruning should be done in the dormant season, not in summer. Spraying is very necessary to insure the maximum amount of healthy foliage. Do not allow the fruit to hang on the tree after the proper time for picking. Put the fruit into storage, cool, not as low as 34 degrees F., at once. Being non-parasitic, it will not spread to other apples in storage.

AERIAL MAIL SERVICE

Uncle Sam started in earnest last month on his aerial mail service. From New York to Chicago seems quite a little trip for the mail sky pilot, but it is little more than stepping across the street compared to the project of London, which, we are told, is to establish mail air routes to India and South Africa.



JONATHAN APPLES BRING TOP PRICES

Plant Trees That'll Bear Early

Most orchardists are two years behind in their planting because of war's interference. But you can in large measure overcome this delay by planting Harrisons' Quality Fruit Trees—they bear early.

Harrisons' Trees run larger for their age than most trees and have magnificent root systems. They are budded from known producers in bearing orchards. You get superior strains with an inherent tendency toward heavy production. Order Apple, Peach, Pear and Cherry Trees from

Harrisons' Nurseries
G. HARRISON & SONS PROPRIETORS

"The World's Greatest Nurseries"

Harrisons' Trees have proved hardy in thousands of orchards in many States and foreign countries. They are bright, healthy and true to name. All are grown under our personal supervision.

Grapes: We offer seven superior varieties for commercial vineyards and home gardens—one and two-year sizes.

Strawberries: Our nurseries are in the center of one of the world's greatest commercial strawberry growing sections. Set our Strawberry Plants between rows of young trees and make a profit while the trees are coming into bearing. We offer 30 leading varieties: Everbearing, Early, Medium and Late.

Plant Evergreens for orchard windbreaks and for the home grounds. We supply splendid, bushy specimens in all the leading varieties. For a beautiful shade, set Harrisons' Norway Maples along the roadside and on the lawn. A hedge of our Thunberg's Barberry requires little care yet is handsome and permanent. Our Flowering Shrubs enrich your home grounds with brilliant colors.

Send today for our 1919 Nursery Book free.

Harrisons' Nurseries

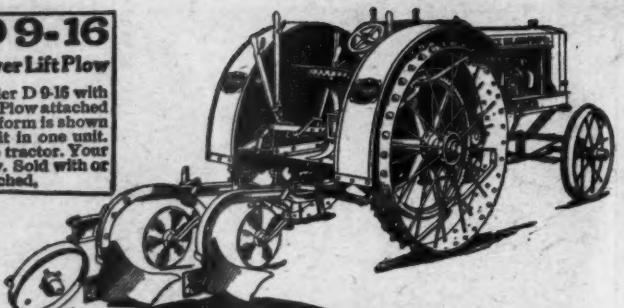
BERLIN, MARYLAND



Here are thousands of Norway Spruce, the best for windbreaks or screens. These heavy, bushy specimens are Harrison-grown.

Model D 9-16
With No. 9 Power Lift Plow

Rock Island Heider D 9-16 with No. 9 Rock Island Plow attached to the tractor platform is shown here. Entire outfit in one unit. Your hands guide tractor. Your foot controls plow. Sold with or without plow attached.



Heider

Gets Into All Corners of Orchard Work

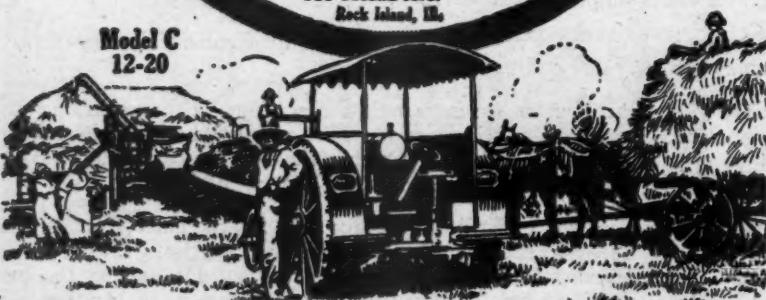
HEIDER Model D 9-16 is the one tractor that has all the points of special design for orchard cultivation. With its exceptional power it has low clearance and it goes everywhere, into every corner. Cultivates every foot. Meets all needs of smaller farms. Same principles of construction as Model C 12-20 Heider shown below.

7 Speeds Forward, 7 Reverse

All with one motor speed, all with one lever for traction or belt work. Less gears. Less upkeep expense. Simplicity itself. 11 Years' Actual Field Work—the proof of experience not experiment. Heavy-duty 4-cylinder Waukesha motor burns kerosene or gasoline without carburetor change. Dixie High-Tension Magneto with Impulse Starter. Perfor Radiator. Kingston Carburetor. U. S. Ball Bearings. Send for catalog.

Rock Island Plow Co.
Established 1855
750 Second Ave.
Rock Island, Ill.

Model C
12-20



Rock Island Farm Tools

Backed with 64 years' experience in implement building and with successful service in all parts of the world.

This line includes Discs, Plows, Planters, Seeders, Cultivators, Lister, Spreaders, Cream Separators, Litter Carriers, Gasoline Engines, Stalk Cutters, etc. Write for Farm Tool Catalog.

BUG KILLERS

Sprays or Powders

Paris Green
Lead Arsenate
Lime-Sulphur
Bordeaux Mixture

Others in Proportion

Write for Prices Today

Sears, Roebuck and Co.
Chicago.

PLANTS—SEEDS—ROOTS

Complete assortment of hardy Northern Berry Plants, Garden Seeds and Roots. Strictly first class. True to name. Prices reasonable. Catalog sent FREE.

A. R. WESTON & CO., Bridgman, Mich.

KNIGHT'S FRUIT PLANTS

have been the Standard for over 30 YEARS. Don't waste time and money with inferior stock.

\$1000 per acre has been made growing Strawberries and Raspberries. YOU can do as well with KNIGHT'S PLANTS. Write for FREE catalog today.

DAVID KNIGHT & SON, Box 100, Sawyer, Mich.

Charles A. Green's Walks and Talks With Readers

The Pruning Season Is Here

I AM OFTEN asked when is the best time to prune orchard trees, grapevines, raspberry and blackberry plants, currants, etc. My reply is, prune any time after the leaves have fallen in the fall. This advice is for those who cannot choose the time of pruning but must prune constantly throughout the winter months. I consider the best time to prune is in late spring, just before the buds begin to open, but if the majority of fruit growers should defer pruning until this late date they would be unable to finish in season. I find no serious objection to pruning in late fall, early winter, or midwinter, but I do not think the wounds heal over so quickly when the pruning is done early in the season. Whatever you do, don't overdo the removal of a quantity of wood from fruit trees in any one season, for then they would be in something like the condition of the man who has surgical operations performed upon his body at the hospital. Such a hospital patient might endure the removal of one leg or one arm, but to have all of his arms and legs removed would be going too far. It might result in serious injury.

An Inspiration Toward Pruning

Whenever I pass by vines, shrubs or trees, or when I look out of the window and see thrifty growing, bearing fruit trees, I feel like picking up my pruning shears and attacking this important work. As I sit in my office I see a peach tree, four years planted, that has borne two crops of fine fruit. The central upright branches of this tree and others near it, need clipping off, therefore I take my pruning shears attached to a long pole or rod and cut off these branches that tend to make the tree too high topped, making it difficult to prune or to pick the fruit. You will be surprised to see the effect of the removal of the tops of five or ten branches from this peach tree. I notice also that many of the side branches need clipping off. There is a fourfold benefit from such pruning as this: first, you improve the shape and appearance of the tree and make it more compact; second, the thinning of the fruit or the removal of fruit buds; third, by making the tree lower headed you make it easier to spray or to gather the fruit; and fourth, it is less effected by high winds. There are peach growers who would advise more thorough trimming than I have suggested for this peach tree. They would say cut off half the last year's growth from every branch.

From another window of my office I see an elm tree with top too widespread or sprawling. While the pruning of elm or other ornamental trees is not so important as the pruning of fruit trees, often a tree may be made far more attractive by the removal of a limb or the heading back of too vigorous shoots. Most people in pruning ornamental trees make the mistake of removing the lower branches, which might be done in case these lower branches shut out an interesting view, but not otherwise. Ornamental shrubs need clipping back, perhaps not every year, but occasionally, otherwise they will become too tall to be attractive. There is more necessity for pruning the grapevine each year than most other fruit bearers.

How to Prevent Injury to Fruit from Frost

No matter where you are located, whether in the north, in the middle states or in the south land, there is ever danger of late spring frosts which are liable to injure various crops of fruits. The first northern trees to blossom are apricots. One reason why the apricot is not a profitable fruit at the north is that it blossoms so early that late spring frosts are apt to injure the blossoms. Next come the strawberry and the peach blossoms which are more often

injured by late spring frosts than any other fruits except the apricot. The fruits named may be injured and yet the later blossoming fruit, such as the pear and apple, may escape. The pear and apple are assumed also to be hardier and less affected by frost than the fruits named.

The old method of preventing injury by late spring frosts, was to build fires of dry brush covered with wet straw. The difficulty with all methods is that you are not certain when frost is about to strike or whether it will strike. Often expense is entailed and there is no frost that night.

The new methods of fighting late spring frosts are first to spray the trees on the night when frost is anticipated. The wetting of the foliage and the moistening of the ground tends to ward off frost.

The latest method is to use hundreds or thousands of fire pots filled with crude oil scattered over the entire orchard to furnish heat and smoke.

Western New York and other eastern and middle states are less liable to be injured by late spring frosts than more western and mountainous states. When wind blow at night frosts are less likely to do injury. When the sky is overcast with clouds all night there is but little danger of late spring frosts. Just what degree of frost may cause the fruits to escape injury is not known. Sometimes a very slight frost seems to do injury, while at other times more serious frosts do but little harm.

Many farm crops aside from fruits, are liable to be injured by late spring frosts. Recall a heavy frost the tenth of June which cut down the corn crop, the corn having grown to the height of four or five inches. Potatoes are easily injured by spring frosts. It is said that crude petroleum mixed with sawdust makes a heavy cloud of smoke and is inexpensive. Smoke-like clouds form blankets over the orchard, sheltering the fruit from the frost. I have not heard of complaints of foliage or fruit blossoms coming in contact with the smoke. It is possible to raise the temperature of the orchard by heat of burning brush or other substances. On every fruit farm there is apt to be a large amount of brush from pruning. This brush may be placed where it can be made available in case of danger from late spring frosts.

A Remarkable Orchard

"Rural Life," a publication sent out from the apple and peach growing section of western New York, contains the photograph and an account of a thrifty western New York apple orchard. The photograph makes it plain that this orchard is far more than the ordinary. It seems though every tree were ideal in shape and size. The ground is thoroughly cultivated and the trees have been properly pruned. Everything indicates that this is a productive orchard. We are told that a single acre of this orchard produced fruit sold for \$1,700, which would be about \$34.00 per tree. The owner gives the famous orchard shallow plowing as well as the soil will work in early spring, then pulverizes the soil finely with a disc and special orchard harrow, keeping up the cultivation until late in July when a cover crop of clover is sown. Pruning begins as soon as leaves are off the trees in the fall and is continued throughout the winter. In pruning the plan is to let in moderate sunlight to color the fruit. In April as soon as the leaves begin growth the trees are sprayed with lime and sulphur and

Set Fruit Trees Along Fences

On almost every farm there are fence lines, boundary fences and cross-section fences along which fruit trees might be planted successfully, but they should not be planted in such places unless attention is given them. We must give up the idea

all we have to do is to plant a tree in order to secure fine fruit. We must give the tree attention. If trees are planted along fence lines they must be banked up each season with fresh earth, otherwise mice will be likely to destroy them by gnawing the bark.

While I speak of these waste places that can be made profitable by skillful fruit-tree culture, I would greatly prefer the open field where more careful cultivation and attention could be given. The kitchen garden cannot be considered waste space, although it is so in many instances, but this garden could be made far more attractive and far more profitable if more of the raspberry, blackberry, currant, gooseberry, grape and a few trees of the peach, pear, plum, apple, quince and cherry were planted therein. The plan should be to plant the trees closely together in the row in the kitchen garden and have these rows so far apart that plowing and cultivating can be done between the rows, and admitting space between the rows for the garden vegetables, mangold, and an occasional row of flowers.

Planting Trees on Waste Land

There is much waste land in this country. In the eastern states there is much sterile land so filled with boulders it would hardly pay to remove the rocks. Fruit trees could be planted in such a rocky field and if given proper attention a productive orchard might be the result.

Think of the waste land along the borders of the highways of this country. Such land would in the aggregate amount to millions of acres of fertile soil that is going to waste. In Germany particularly, and also in other parts of Europe, fruit trees, especially the plum, are grown by the roadside. These fruit trees not only produce considerable income aside from the fruit used fresh picked by the family, but add to the beauty of the highways. Newly cleared timber tracts are sometimes planted to fruit trees successfully, but do not recommend such planting for the reason that the soil is apt to be full of stumps and roots from which sprouts are put up which, uncontrolled, would take possession of the clearing and transform it into a forest to the detriment or destruction of the fruit trees planted there. There is a wide difference between planting trees on newly cleared stumpy land, and the planting on rocky soil which cannot be cleared but which is free from the liability of reverting to a forest.

Tile Draining Important

There would seem to be no argument in regard to the desirability and profit of tile draining. The main question seems to be how much tile can I afford to put in at the present time and which part of my farm most needs drainage, and where are the danger points.

In my opinion the danger point is more often at the outlet than elsewhere. I recently saw on a well kept farm a block of concrete at the outlet of the drain, the tile appearing near the center of this block of concrete. This is the first time I have seen such an outlet and it struck me as being unusual. How could the outlet become clogged with such protection as this? There is no protection the bank of the ditch crumbles and washes away, exposing the tile which is apt to freeze and crumble, and if not attended to the drain is clogged up at the outlet. Another danger point is in having a sag in the drain at any point where sediment is liable to gather and close the drain. Sometimes muskrats or other wild animals swim into the drain and perish, thus obstructing it. I have known ditches to be dug and tiles put in during the winter months. During the open winters this work can be conducted almost every day, while other winters perhaps not more than half the time can be devoted to ditching. There are ditching machines now which excavate the ditch very rapidly and inexpensively. These machines should be community property owned and run by several farmers.

Sunday on the Farm

Sunday on the farm appears in the eyes of city people as a dismal day. Having spent the larger part of my life upon the farm, I can testify that for me Sunday has not been an enjoyable and restful day. Having nothing to do but the chores was, itself, an enjoyable event. As a child on the farm I used to take pleasure in sitting in the sunshine on the seat of the primitive reaper that was in use so many

years ago, or in strolling through the orchard or the woodlands, or through the lanes. Then came the good appetite for dinner which is never lacking in the active farm boy.

As a child I did not enjoy the church service on Sunday for the preaching was too profound for my limited capacity, but I enjoyed the ride to and from church. I enjoyed wearing old clothes not easily soiled and was never happy in a starched shirt or in my Sunday apparel. As I grew older I took more interest in the church, which is, and ever has been, one of the great attractions in benevolent organizations of country life. I never formed the habit of boating, hunting and fishing on Sunday though I enjoyed those pastimes marvelously.

What has the city to offer for the enjoyment of Sunday as compared with that which farm life offers? The average city lad goes to church and Sunday school. He may stroll up and down the streets, but the views are too common to be noticeable. He may go out into the parks which are miles distant or to some summer resort, but when he returns at night he is inclined to say with Solomon: "Vanity, all is vanity."

Ripe Grapes

"Why don't you allow your grapes to get ripe before picking them?"

"I do let them get ripe."

"Probably you think you do like most other people who pick their grapes a long time before they are fully matured."

There are many people in this country who never eat a ripe grape. A large portion of the grapes shipped to market are picked before they are fully ripe. The earliest grapes appearing in the market sell for a higher price than those that come later. In order to get the grapes into the market very early they are picked long before ripe and when in no condition for eating.

Last fall I visited a Worden grapevine that trails over the rear porch of my house. This grapevine has been an interesting object to the milkman, the boys who deliver daily papers and many other individuals, including the grocer's delivery boy. Members of the family have also been regaled by the fruit of this vine this year as in all the past thirty years. As I pushed aside the broad leaves I found here and there a scattering cluster of grapes which were dead ripe. I had a chance here to compare the ripe grapes from this vine with those that were picked and eaten unripe earlier in the season. The difference in the quality of the early picked fruit and the late picked is marvelous. The grapes picked when fully matured are most luscious and sweet, while those picked early are more acid and lacking in flavor.

But after the grapes have held on the vines a long time they drop more easily from the stem, therefore these late picked grapes would not endure shipment so well as those picked earlier.

I have eaten the Brighton grape that had ripened to such an extent that they were shriveled and had begun to turn to raisins. In this condition the Brighton grape was most luscious, but it is not necessary to let it remain on the vines so long as in the above instance.

Grapes picked when not fully ripe, and stored in a cool cellar, will continue to ripen and sweeten to a moderate extent, but grapes picked when noticeably immature and before they have fully colored will not ripen after picking as above set forth.

Many people have difficulty in keeping grapes through the winter months. When stored in the cellar in ordinary ten or twenty pound baskets they will remain in good eatable condition without further attention for a month, after which the stems dry up and the berries shrink and sometimes mold and rot. The old method of keeping grapes through the winter was to dip the end of the stem in wax, which prevented the stem from drying. Then the clusters were laid on shelves only one bunch thick and kept in as cool a room as possible.

NEW WAY TO BUD SEEDLINGS

With the supply of seedlings from France and Holland cut off, and with the impossibility of getting from Madagascar the raffia which for years has been used to tie the buds, it became necessary to find a substitute for the purpose. The most satisfactory is a device something like a clothespin held by a spring, and this has been found to equal raffia in holding the bud in place. The same pin may be used several times.

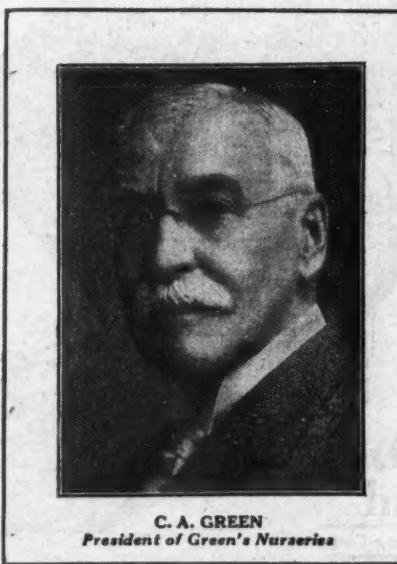
Green's Nursery Company

The Old and Reliable

The Proved and Tested

Forty Years' Experience

FOUR NURSERY FARMS



C. A. GREEN
President of Green's Nurseries

We offer our services in supplying you with fruit and ornamental trees, plants and vines.

The largest nursery in the world selling direct to planters.

Read Our Guarantee True to Name

We offer as a gift with every order, amounting to \$5.00 or over,

ONE STRONG GRAPE VINE

a new and delicious variety known as an *early red Concord*,

provided the order is received on or before
March 15, 1919

Buy Direct of the Grower and Save Money

Our new illustrated catalog will be sent FREE upon application.

Green's Nursery Company
105 Wall Street, ROCHESTER, N. Y.

Spraying for Profit

Give trees more care and they yield better fruit. Spraying is the best protection for your trees and your profits. How free your crops are from blight and blemish depends on how carefully you spray and how reliable are your spray materials.

Exercise the same care in protecting your trees and plants as you would in buying them. The names of spray materials are the same but the quality differs. Buy Orchard Brand and you buy the best quality. Orchard Brand is the trade name of a complete line of insecticides and fungicides that do the work. The name on the package is an assurance of full money's worth of crop protection.



Orchard Brand
Spray Materials

are manufactured by the largest chemical company in America. Several valuable products possessing decided advantages have been originated by our Research Department. A partial list of our products which are invaluable to the farmer at the present time is given below:

FOR FRUIT TREES AND VINES:
B. T. S. Arsenate of Calcium
Lime Sulphur Solution Bordeaux Mixture
Arsenate of Lead Atomic Sulphur

FOR POTATOES:
Arsenate of Zinc Zinc-Bordeaux
Lazal (for dusting)

We maintain a Service Bureau to aid the farmer in solving his spraying problems. Write us concerning yours.

General Chemical Co.
Insecticide Dept., 25 Broad St., New York

BUCKBEE'S "Full of Life" Seeds

GROW BUMPER CROPS

BUCKBEE'S "Full of Life" Seeds are of Highest Quality. None better at any price. World Beating Prize Winners at all County and State Fairs.

BUMPER CROP COLLECTION Made to Build New Business
Radish—Earliest of All, worth 15c Lettuce—Sensation, worth 15c Cucumber—Table Queen, worth 15c Onion—Golden West, worth 15c Celery—Long Keeper, worth 20c Tomato—Everbearing, worth 20c

This Collection of World Beaters worth \$1.00.
Guaranteed to please. Write to-day; mention this paper.

SEND 10c to help pay postage and packing and receive this valuable Bumper Crop Collection of Seeds, postpaid, together with one big, instructive, beautiful Seed and Plant Book. Tells all about Buckbee's Famous "Full of Life" Seeds, Plants, Bulbs, etc.

H. W. BUCKBEE **ROCKFORD SEED FARMS** **ROCKFORD, ILLINOIS**

Bulletins Well Worth Reading

The following bulletins may be had free upon application:

Farm Practices that Increase Crop Yields, The Gulf Coast Region, Farmers' Bulletin 986, U. S. Department of Agriculture, Washington, D. C.

Water Systems for Farm Homes, Farmers' Bulletin 941, U. S. Department of Agriculture, Washington, D. C.

The Spiny Ear Tick, and Methods of Treating Infested Animals, Farmers' Bulletin 980, U. S. Department of Agriculture, Washington, D. C.

The Spotted Garden Slug, Farmers' Bulletin 959, U. S. Department of Agriculture, Washington, D. C.

Hemorrhagic Septicemia, Stockyards Fever, Swine Plague, Fowl Cholera, etc., Farmers' Bulletin 1018, U. S. Department of Agriculture, Washington, D. C.

Bean and Pea Weevils, Farmers' Bulletin 983, U. S. Department of Agriculture, Washington, D. C.

Terracing Farm Lands, Farmers' Bulletin 997, U. S. Department of Agriculture, Washington, D. C.

Crop Systems for Arkansas, Farmers' Bulletin 1000, U. S. Department of Agriculture, Washington, D. C.

Co-operative Bull Associations, Farmers' Bulletin 993, U. S. Department of Agriculture, Washington, D. C.

Making Southern Mountain Farms More Productive, Farmers' Bulletin 905, U. S. Department of Agriculture, Washington, D. C.

Culture of the Logan and Blackberry, Farmers' Bulletin 998, U. S. Department of Agriculture, Washington, D. C.

The Round Barn, Circular 230, Agricultural Experiment Station, Urbana, Ill.

Steam Sterilization of Seed Beds for Tobacco, Farmers' Bulletin 996, U. S. Department of Agriculture, Washington, D. C.

Preparation of Eggs for Market, Lesson 133, Poultry Series, State College of Agriculture, Ithaca, N. Y.

Insects of a Citrus Grove, Bulletin 148, Experiment Station, Gainesville, Fla.

The Almond in California, Bulletin 297, Agricultural Experiment Station, Berkeley, Cal.

Some Diseases of the Fig, Bulletin 149, Experiment Station, Gainesville, Fla.

Getting Rid of the Stumps, Wisconsin Bulletin 295, Agricultural Experiment Station, Madison, Wis.

Systematic Hog Farming in the Southern States, Farmers' Bulletin 985, U. S. Department of Agriculture, Washington, D. C.

Chopped Alfalfa vs. Bran in Grain Ration for Dairy Cows, Bulletin 164, Agricultural Experiment Station, Lincoln, Neb.

Florida Citrus Diseases, Bulletin 150, Experiment Station, Gainesville, Fla.

Focusing on the Country Community, Circular 211, College of Agriculture, Morgantown, W. Va.

The Seedless Raisin Grapes, Bulletin 298, College of Agriculture, Berkeley, Calif.

Culture and Uses of Okra, Farmers' Bulletin 232, U. S. Department of Agriculture, Washington, D. C.

The North Dakota Farmstead, Its Arrangement and Adornment, Circular 10, Agricultural Experiment Station, Agricultural College, N. D.

Food for the Soil, Legumes, Circular 107, College of Agriculture, Madison, Wis.

The Oriental Peach Moth, Volume 7, No. 9, State Commission of Horticulture, Sacramento, Cal.

Commercial Feeding Stuffs and Registrations for 1917, Bulletin 311, Agricultural Experiment Station, New Brunswick, N. J.

Fertilizer Report for 1917, Bulletin 204, Agricultural Experiment Station, New Haven, Conn.

California State Dairy Cow Competition, Bulletin 301, Agricultural Experiment Station, Berkeley, Cal.

Feeding Dairy Cows and Calves, Director Agriculture College Station, Tex.

Peaches, Plums and Cherries for the Home Orchard, Circular 18, Missouri State Fruit Experiment Station, Mountain Grove, Mo.

Sow the Best Seeds

Your Money Will Buy

Don't experiment with novelties or untried sorts. America must feed the world, and every acre must yield to the limit. Our 1919 Seed Book lists only standard, tested



Storrs & Harrison Seeds



grains, vegetable and flower seeds, fruits and plants, years of honorable business justifies in saying "no better seeds are sold, few are as good." America's Largest Departmental Nursery: 1200 Acres; 48 Greenhouses. Send today for this free catalogue.

Box 655 The STORRS & HARRISON Co., Painesville, Ohio

Thrifty, Sturdy Trees

You can be sure when you buy Woodlawn grown fruit trees, vines, berries, evergreens, everblooming and heavy bearers. Over 45 years successful growing experience has been directed towards producing a wide variety of that kind of stock. We have the exclusive sale of the famous "Dr. Worcester" Peach.

Our extensive line of ornamental shrubs, bushes and perennials are of the same dependable quality as our trees.

Special Fruit Garden Offer. Write for details for this complete fruit garden at a special price. Our illustrated 1919 Nursery List contains valuable planting and growing information. Mailed on request.

WOODLAWN NURSERIES
883 Carson Ave. Rochester, N. Y.

Sonderegger's Acre Orchard

Fruit is Scarce and high-priced and will go higher. Plant as acre orchard this year and you will never regret it.

55 Apple Trees, 3 to 4 ft....	\$9.90
15 Pears, 3 to 4 ft....	4.50
20 Peach Trees, 3 to 4 ft....	4.40
15 Dwarf Pears, 3 to 4 ft....	4.20
15 Currants, assorted....	0.25
15 Gooseberries, assorted....	2.25
	\$27.90

Entire Orchard

delivered at any railroad station in the country for \$26.

We will select your varieties, choosing the right kinds for your climate. In one year you will have Currants, in two years Curries and Gooseberries, and in three years Cherries, Peaches and Nectarines. All kind of Trees and Seeds at wholesale prices. Catalogue free.

SONDREGER NURSERIES AND SEED HOUSE
31 Court Street, Beatrice, Nebraska

Trees and Seeds That Grow

Strawberries

(The Wonderful Everbearing and All Other Fruit Plants)

We are headquarters for all kinds of Strawberries. Plants including the Fall or Everbearing, which fruit in August, September, October and November as well as in June and July. Also Raspberry, Blackberry, Gooseberry, Elderberry, Currant and Grape Plants, Fruit Trees, Rose, Ornamental, Shrub, Vine, Herbs, Vegetable Plants, Eggs for Hatching, Crates, Baskets, etc. Live Stock, Low Prices. 25 years' experience. Catalogue free.

L. J. FARMER, Box 807, Pulaski, N. Y.

Lovett's Red, White and Blue Grapes are the BEST Grapes in existence. Strawberries, Raspberries, Blackberries, Currants and Gooseberries par excellence. Our catalog No. 1 tells all about them. In it are described and offered a full line of Fruit Trees, Ornamental Trees, Shrubs, Vines, Roses, Nut Trees, Hedge Plants and Garden Roots. Send for it today—it is free.

J. T. LOVETT, Inc. Little Silver, N. J.
Box 134

JONES' NUT TREES

My hardy Pennsylvania grown, budded and grafted trees are the very best obtainable. Don't waste money and time planting worthless seedlings or Southern-grown trees, but write today for a copy of my free catalogue and cultural guide.

J. F. JONES, The Nut Specialist
Box W, Lancaster, Pa.

EVERGREENS HILL'S 36 Month Test Varieties
Fine for windbreaks, hedges and lawn planting. All hardy, vigorous and well rooted. We ship everywhere. Write for free Evergreen book, illustrated in color.

D. HILL NURSERY CO., Box 5 237 Dundee, Ill.

Special Offer

Everbearing Strawberries | Peaches | Peaches

AMERICUS, PROGRESSIVE, SUPERB, FRANCIS, PEERLESS—some of each while in supply. When sold out of one or more we will send the others. Don't Delay.

100 Plants, \$1.75; 200 Plants, \$3.00; 300 for \$5.00 Catalog Free.

C. N. FLANSBURGH & SON, Jackson, Michigan

BIG QUICK PROFITS

Growing Strawberries and other small fruits. Our hardy Northern grown plants will start you toward success. We grow all the leading standard varieties of Strawberries, including the Wonderful Everbearing varieties, also Raspberries, Blackberries, etc. Our long experience and Square Deal protects you. Don't buy until you have seen our new catalog. Write today, it will save you money.

HENRY J. EMLONG & SONS, Stevensville, Mich.

Small Fruit Planting

By C. C. Wiggins, Missouri

WHILE bush fruits are not so important commercially as our tree fruits, nor so universally grown as the strawberry, still there is a place for them in the fruit plantation. This is especially true for the home planter where a few of the favorite sorts may be grown with only a small amount of care. They will often be the source of considerable income as well as furnishing a delightful variety to the fruit crop. The raspberry is justly the most popular of the small fruits, and the gooseberry probably stands second.

In general the small fruits thrive best in a cool climate such as that found in the northern half of the United States. They do not grow well in the southern sections. They may be grown over a wide range of soil, but for their fullest development they require a well drained soil which at the same time is a drought resisting soil. A soil that dries out quickly is unsatisfactory, not only because the fruit does not mature properly under such conditions but also because the new canes for the next year's crop will not develop in sufficient numbers. Poor soil also is unsatisfactory because of the inability of the plant to renew the fruiting parts as it should. The berry field should always be located on a slope if possible. Air drainage can then take place, and thus sometimes serve as a protection from cold or spring frosts.

Spring or Fall Planting

Spring planting is probably to be preferred over fall setting, but it must always be done before any growth has taken place. In the case of gooseberries, this means that this operation must take place quite early. Fall planting is used in some berry growing sections because at that season more moisture is present than at other times. Usually some sort of winter protection must be given to fall set plants.

The planting distances vary with the variety being planted, and the training system to be used later. Raspberries may be set four feet apart in the row, and the rows from six to eight feet apart. Gooseberries do not grow quite so large and hence may be set somewhat closer, say four by five feet. Vigorous one-year-old plants, the kind that should always be purchased, may be easily and quickly set by the use of a spade, or in a furrow that has been opened up along the row.

Good cultivation is essential if the planting is to yield the maximum crop. An acre of raspberries may yield as much as 4,000 quarts, but in order to do this it must be well located and properly cared for. Cultivation helps to conserve the moisture and also makes more plant food available for the use of the growing plant. The greater part of the cultivation may be done with a horse cultivator, but a certain amount of hoeing is also usually necessary. Sod of all sorts is to be avoided. During the first year of the planting, cultivated crops, such as tomatoes or cabbage, may be sown between the berry rows, but this practice is of course impractical as soon as the fruiting begins.

Winter Protection in the North

Winter protection of some sort is sometimes required in the more severe climates, especially with raspberries. This may be secured by bending down the fruiting canes and covering them with straw or soil. A cover crop, sown in late fall to keep the ground from washing, may serve the same purpose but under these conditions, cultivation must begin very early the following spring to keep the sod from getting start. Cultivation is just as essential during the succeeding summers as during the first summer after planting.

Prune for Continued Vigor

Annual systematic pruning must also be practiced if the yield is to be held at the highest point. Under good cultural conditions, all of the small fruits produce much more fruiting wood than they need. If this is allowed to remain, a large fruit crop will be developed, but vigorous fruiting canes for the succeeding crop will be scarce. Thus, one crop will be produced at the expense of the next, and under such management the life of a planting will be very short. A well managed plantation should remain productive for a good many years. The kind of training to be used will

vary according to the section where grown and the particular sort being pruned. Under most circumstances, however, the black-cap and purple-cane type of raspberries will be pruned somewhat according to the following plan. The fruiting wood of the raspberry is renewed each season. In order to keep the new canes from becoming too long it is necessary to pinch out the tip ends sometime during the growing season. This causes them to produce several vigorous laterals which will furnish stems upon which the fruit may be borne the next season. In the case of the black raspberry this pinching should take place when the new cane is about eighteen inches high, while with the purple sorts, which grow more vigorously, it should be done at the time the new canes reach a height of two and one half feet.

Since the old canes become useless as soon as they have fruited, they should be removed at that time. In this way, the new canes are given more room and also such a practice helps to control some of the diseases. The spring pruning will consist of thinning out the surplus canes and cutting back the laterals on those that remain. From three to five strong canes are sufficient for each hill. The laterals should be shortened to a length of from eight to twelve inches. This pruning is usually done just before growth begins.

Habit of the Gooseberry

The gooseberry does not renew the fruiting wood each season, but nevertheless it is advisable to encourage considerable new growth each year, since the best fruit is borne on the one-year-old canes. Each year, then, an attempt should be made to remove as much of the old wood as possible, and still leave enough fruiting wood for a good crop. From seven to ten canes will usually be sufficient for this purpose. Summer pinching is unnecessary and usually but little clipping back will be required. All this pruning is done in the spring. A well pruned plant will not be nearly so susceptible to the attacks of mildew as one that has been allowed to become very bushy.

Good Varieties of Raspberries

Different varieties are adapted to various conditions and needs. Among the blackcap raspberries, the Cumberland is probably more widely planted than any other variety. It is usually hardy, very productive and of high quality. It ripens in midseason. The Farmer, an early variety, has a very short season, but the variety is quite valuable because of its ability to withstand drought. It is often planted with the Cumberland. The Pearl resembles the Farmer in its bearing habits and also its season. The Kansas is a good, early season berry and the Gregg may be used for a midseason sort.

The Cardinal is grown over a wider range of territory and conditions than any of the other purple varieties. The berries are quite large, although somewhat soft, but the plant is very hardy. The Royal is very productive and the fruit is quite firm. The season is much later than that of the Cardinal. It is a new variety, however, and should be tested before being extensively planted. The Columbian is also grown extensively, especially in the East.

The Cuthbert is one of the best of the red raspberries, but it is not so hardy nor so productive as some of the other sorts. It is a late berry. The King is an early variety that does well in certain sections of the middle west. The Sunbeam is considered promising in some of the northern states and the Surprise is extensively grown in California. The St. Regis has a very long season and in some sections tends to become an everbearing sort. It is not exceptionally productive.

BALDWIN of Bridgman

Has printed 85,000

Baldwin's Big Berry Books, and there is one for you. It is chockfull of interesting, instructive and valuable information about berries and small fruits.

You need this book. If you are not interested in fruit growing—Baldwin's kind—you should be. It is the berry growers' guide, describing the most complete line of plants in standard varieties and everbearing Strawberry, Raspberry, Blackberry, Currant and Grape Plants, illustrating and explaining in detail the values of each variety, and it does more—it supplies a valuable treatise on berry growing and successful berry culture that will prove valuable to you. Even though you may never purchase a cent's worth of plants from Baldwin, you should have his book as a guide in the berry business. It explains why Baldwin's plants should be your choice, and why and how they are the money makers. Get the book. It is yours for the asking.

Baldwin's Berry Plants are Famous

We are not deceiving our customers by exploiting our plants under high sounding names. We are improving and developing the standard varieties, all well known to you. This illustration shows one of Baldwin's fields October 23rd corn harvesting, (see corn field in the rear) and berry picking going on at the same time.

We have the earliest varieties, the medium

early, the medium late and the late varieties.

All money makers. You get from

Baldwin the varieties that produce

earliest in the Spring and latest

In the Fall, as well as the

best berries, by plant-

ing only Baldwin

Berry Plants.

Note Field of
Corn in the
Background.

Corn harvest-
ing, berry picking
going on at the same
time on Bald-
win's plant
farm Oct.
23rd.

A full
crop of
berries this
fall from
plants set
this Spring.

We grow
millions of
Strawberry, Ras-
pberry, Blackberry,
Currant and Grape Plants,
on our rich new ground
that is free from insects
and plant diseases.

New ground pro-
duces larger and
stronger plants, heavily
rooted—the money mak-
ing kind. That is why Baldwin

can serve you best. Another im-
portant fact—Baldwin grows plants
for plants only, never allowing anything
to fruit in plant fields. Baldwin's new
ground plants are famous in every fruit sec-
tion in America.

Order Early

We'll Ship at Planting Time

Get the Big Baldwin Berry Book now (a postal card will bring it) and get your order in early. Thus you will run no danger of stock being exhausted and there will be no delay. On account of our immense sale of plants, we can save you money. Give us your order this year and we will keep you as one of our regular, satisfied customers for years to come. Don't wait, however. Order early.

Plant Baldwin's Peace Victory Berry Plants

Best for the Home, Garden and Market Purposes

You have a patriotic duty to render your country and the world—Help make our peace victory what it should be by producing the best fruit to feed the world—we will do our part. Every plant we sell is true to name, free from disease, fresh dug for your order, packed in the most approved manner, shipped the best way to reach you in good condition.

We have excellent plants, but the sure way to get them is to order early. We ship at planting time, but late orders may be too late. Save a day. Write tonight.

O. A. D. BALDWIN

Bridgman, Michigan

R. R. 11



Kindly Mention American Fruit Grower when writing to Advertisers

Stop Hatching Weak Chicks



With Cheap Incubators

Remember it is not how many you hatch that counts, but how many you raise. Chicks that hatch out weak and wobbly, and live but a few days, mean nothing to you except trouble and loss. They make one sick of the poultry business. Most of the chicks you lose in the first two weeks die because they did not hatch out with enough vitality or strength for a good start.

Queen Incubators

Hatch Chicks That Live and Grow

The Queen is accurately regulated—taking care of a temperature variation of 70 degrees without danger. It is built of genuine California Redwood—very scarce in these days of imitation and cheap substitution. Redwood does not absorb the odor from the hatching eggs. Cheaper woods, and pasteboard lining in iron and tin machines, retain the odors, to weaken and kill the hatching chicks. Start your chicks with a Queen constitution and they will make money for you. The Queen is not a cheap incubator, compared with many of the cheaply constructed machines on the market, but it is cheap in the long run. It will be turning out high percentage hatches years after the cheap machines have been junked.

Sold by dealers. Catalog sent free on request.

QUEEN INCUBATOR CO.

Lincoln, Neb.

Make a few Dollars Bring Hundreds

Thousands of people are doing it every year with

Old Trusty

Incubators and Brooders

Thos. Ashley, Kimball, S. D., with one Old Trusty sold \$350 worth of eggs, \$200 worth of pullets, \$200 worth of roosters, has 50 hens left and does not count what family used.

H. F. McDonald, of Manchester, Iowa, using one Old Trusty, says, "My Poultry sales for 10 months are \$104.00. Send me your name and

Get My Poultry Book FREE

It's more than a catalog. It's filled with practical information—the kind that 95 out of 100 poultry raisers want. Size 9 x 12 inches.

800,000 satisfied customers say that you are not trying out someone's experiment when you get Old Trusty. Handy home sizes—wood or without metal cover. Write today.

Harry Johnson, "Incubator Man"

M. M. Johnson Company, Clay Center, Neb.



Quick Shipments from Clay Center, Neb. or St. Joseph, Mo.

Fertilizer Is an Investment — Not an Expense

YES SIR! The more dollars I can spend in fertilizer the better off I am, just so long as each additional dollar returns it's profit. The question is

Not How Little but How Much Fertilizer Can You Use to Advantage

Your investment in land, buildings, stock, and machinery is fixed—and must be carried, regardless of the size of your crops. The way to make this entire investment pay a bigger profit is by using fertilizer. The same labor, the same work horses, the same machinery, the same land—with fertilizer added—will earn a bigger return.

Are You Using Enough Fertilizer?

Increase your plantfood application this spring by using higher grade fertilizer. Buy fertilizer containing not less than 14 per cent. of total available plantfood—phosphoric acid, ammonia and potash. High grade fertilizer furnishes plantfoods at the lowest cost and returns the biggest profit on the investment.

Write for our interesting bulletin on fertilizer usage

Soil Improvement Committee

of the National Fertilizer Association
901 Postal Telegraph Bldg. 1401, The Munsey Bldg.,
Chicago Baltimore

"Fertilizer Feeds the Crops that Feed the World"

Poultry for Profit



By C. A. Langston, Editor of "Poultry for Profit" Department

FEBRUARY always brings welcome relief to those poultry keepers who depend upon hens and late-hatched pullets for eggs. The joy of gathering fresh-laid eggs will soon crowd out the recollection of winter days when the principal work with the poultry was feeding and watering. During the period of high prices for eggs there were no eggs to sell but there was feed to buy—money going out for feed, nothing coming in.

It is hard to believe, however, that poultry keeping on this basis is really profitable. There may be notable exceptions, but as a general rule any method of poultry keeping which does not secure a fair egg yield during the period of high prices is almost certain to prove unprofitable. One exception to the general rule is the small-farm flock which has the run of barn and stable. A small flock kept under these conditions will pick up grain that otherwise would go to waste, and hence, eggs from such a flock might be considered clear profit. Another exception is the back-yard flock maintained by table scraps, which under other conditions go into the sewer.

A Back-Yard Record of Profit

A prominent metropolitan daily has quite recently brought fame to a back-yard flock of seven hens. According to the headlines, this little flock returned a clear profit of \$24.69 in nine months, but the detailed account of the test does not support the headlines.

This flock of seven hens was bought Dec. 18, 1917, for \$5.80. The value of these same hens at the close of the test period, Dec. 1st, was estimated to be \$9.00. Here is an unearned increment of \$4.20. But maybe this flock was bought at a bargain. Somebody was hard up for cash and had to sell. If so, it is not a fair example.

The value of the eggs from January to Sept. 18 was \$28.50; the cost of feed for the same period was \$7.01. This low feed cost is entirely possible. This was a back-yard city flock and it had all the table scraps from a family of four. Hence the cost of these scraps was a part of the family grocery and meat bill.

The cost of housing was zero. The flock roosted in the basement in winter and in a dry goods box in summer.

Analyze This Record

Now, let us review this poultry adventure from the standpoint of ordinary poultry knowledge.

This flock was bought for \$5.80 and at the close of the test it was valued at \$9.00. The conclusion is that the purchase price was due to some special circumstance; the original owner was ignorant of the market price, or was a half-wit, or was hard up for cash. The last classification would probably get a lot of us, but neither classification should be the basis of a test for national publicity on behalf of poultry production.

This flock produced 71 dozen and 5 eggs which were valued at 40 cents a dozen. It was purchased the middle of December and the first eggs were gathered in January—21 eggs for the month. The cost of keeping this flock until it commenced to lay is not considered. It is further noted that the test period was from the first egg to the last. In other words, the period of non-production does not have consideration. Ordinary poultry keepers who carry hens through the molt, have to pay for the feed, and the cost of this feed is a part of the cost of keeping poultry. If non-laying hens did not require feed, poultry keeping would be highly profitable. This type of press report is partly responsible for those annual boycotts which occur in the larger cities and which effect a reduction in the price of eggs at the cost of the producer.

Hatch Early This Year

The government is promoting a campaign to encourage early hatching. As this has been a favored subject of discussion in the poultry department of the AMERICAN FRUIT GROWER, the policy of the department is most cordially welcomed. The reasons for early hatching have been stated many times in these columns. It is a pleasure to restate some of them.

1. Hens commence to molt about the first of September and the new coat is completed about the middle of January. During this period of 90 to 100 days, hens lay very few eggs. Hence late fall and early winter are the period of high-priced eggs. The high price is due entirely to scarcity. The chief supply during this period is from storage—that is, eggs gathered by country stores in spring at 25 and 30 cents, and taken by factors and put into storage for the anticipated scarcity of late fall and early winter.

2. Early-hatched pullets are the sole

126 Eggs 5 Days

Mrs. J. O. Oakes of Salina, Okla., writes: "I wouldn't try to raise chickens without 'More Eggs,' which means more money. I use it right along. I have 33 hens and 5 days have gotten 10½ dozen eggs or 126."

You can do as well. Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents' worth of "More Eggs," and you will be amazed and delighted with results. "More Eggs" will double this year's production of eggs, so if you wish to try this great profit maker, write E. J. Reefer, poultry expert, 3652 Reefer Bldg., Kansas City, Mo., for a \$1 package of "More Eggs" Tonic. Or send \$2.25 today and get three regular \$1 packages on special discount for a season's supply. A million dollar bank guarantees if you are not absolutely satisfied, your money will be returned on request and the "More Eggs" costs you nothing. You take no risk. Write today. Pin a dollar bill to your letter or send \$2.25 on special discount for 3 packages. Or ask Mr. Reefer to send you free his poultry book that tells the experience of a man who has made a fortune out of poultry.

GET MORE EGGS ON LESS FEED

Egg prices this winter will undoubtedly be the highest in the world's history. Those who know how to feed to get winter eggs will reap enormous profits, while improper methods mean a loss.

Prof. T. E. Quisenberry, one of the world's greatest poultry authorities and President of the American Poultry School, Box 84, Leavenworth Kansas, has issued a 16-page bulletin on "How and What to Feed for Heavy Egg Production and to Cut the Cost of Feed." This Bulletin will be mailed free to interested readers, while they last. Hundreds of hens fed and cared for under Prof. Quisenberry's direction have laid 200 to 298 eggs per year, while the normal production according to U. S. Government reports is 60 to 80 eggs per year. Write today for your copy of this valuable Bulletin—Adv.

HELMAN'S S C BLACK MINORCAS have won the OHIO STATE CHAMPIONSHIP three successive years. Stock and eggs for sale. CHARLES W. HELMAN, Box 264, Waverly, Franklin, Minorca cock, winner of 7 first premiums.

Poultry Book Latest pages, 215 beautiful pictures, hatching, rearing, feeding and diseases information. Describes busy Poultry Farm handling 55 purebred varieties and BABY CHICKS. Tells how to choose, towel, eggs, incubators, sprouters. Mailed for 10 cents. BARRY'S Poultry Farm, Box 96, Clarinda, Iowa.

RAISE BELGIAN HARES Huge profits easily and pleasantly made. Write for book, "How to Raise Belgian Hares," by mail. NATIONAL FARM & FARM ASSOCIATION, Dept. 39, MILWAUKEE, WIS.

62 BREEDS Most Profitable Pure-Bred Chickens, Turkeys, Hardy fowls, eggs, and Incubators at lowest prices. American's Poultry Farm. Write for valuable Poultry Book. F. A. NEUBERT, Box 833, Mankato, Minn.

64 BREEDS Most Profitable chickens, ducks, geese and turkeys. Chicks, pure-bred, northern raised. Fowls, eggs, incubators at low prices. America's greatest poultry farm. 26th year. Valuable new 112 page book and catalog. R. F. NEUBERT, Box 833, Mankato, Minn.

THE LOWEST-PRICED INCUBATOR PER CHICK HATCHED

This is proved by the "Successful" 50 year record. You want the "Successful" for a sure success this year. Sell more eggs and chickens—help feed the world.

"SUCCESSFUL" INCUBATOR OR BROODER

Write me a postal for book and prices. "Proper Care and Feeding of Chickens, Ducks and Turkeys" sent for 10 cents. "Successful" Grain Sprouters furnish green food—make hens lay in winter. Ask about my high-grade poultry—all leading varieties.

J. E. Oberst, Pres.
DES MOINES INCUBATOR CO.
10 Second St., Des Moines, Ia.

POLYTY LESSONS FREE TO EVERY CUSTOMER

You Take No RISK Both \$14.75—
With 30 Days Free Trial Freight Paid
An 10 Yr. Guarantee

Think of it! You can now get this famous Iron-Covered Incubator and California Redwood Brooder on 30 days trial, with a ten-year guarantee, freight paid east of the Rockies.

150 EGG INCUBATOR CHICK BROODER

Incubator is covered with galvanized iron, triple walls, lower Jacks, top Jacks, and a double door. Brooder is roomy and well made. Order direct from this advertisement, or write to me for catalog and send for free catalog.

IRONCLAD INCUBATOR CO.
150 EGG INCUBATOR
150 EGG BROODER
MADE OF GALVANIZED IRON
WITH GALV. IRON DOORS

SOFT-HEAT Hatches Stronger Chicks

Greatest Incubator discovery in 50 years insures you strong and healthy chicks from all good eggs. Result of 25 years experience, and scientific study.

Porter Soft-Heat Tubeless

Incubator is a combination of hot water and air—mothers the eggs better than any hatching method in the world, over all eggs. Center heat plan, only 3 quarts of oil. Eggs turn semi-automatically without removing tray. Round egg chamber.

FREE!—Big New Book—FREE!

Tells how you can cut hatching expense and make poultry raising a pleasant and profitable business. Every Porter Soft-Heat Incubator backed with Iron-Clad Guarantees. Write for free illustrated book today—it will make you money.

PORTER INCUBATOR CO. Box 57, BLAIR, NEBRASKA

ALL METAL INCUBATOR

The new 1919 Cycle Hatcher is a new easy simple, practical, 50-egg incubator. All metal construction, fireproof—no warping, swelling, shrinking or cracking—built to last for years and produce big batches of strong, liveable chicks season after season. Hatchers hens', ducks', geese or turkey eggs equally well. Costs little to operate, one gallon of oil will run a full hatch. Requires less attention than a setting hen and is always ready for use. Hatch your chicks early, it's nature's most favorable growing season. Hatchers only \$7. Combined hatcher and brooder "Metal Mother" one lamp doing double duty only \$9. Lightweight, one by express or parcel post at small expense. Our new catalog "The Profitable Home Poultry Plant," gives particulars about our new way of keeping poultry that gets the most from hens. Entirely different from other methods and produces remarkable results. Write today for free copy. CYCLE HATCHER CO., 63 Main St., Elmira, N.Y.

We Guarantee More Eggs

A good layer will transform one dollar's worth of food and supplies into 20 worth of eggs at present prices. To be a good layer, hen must be in top notch of health. That is GERMZONE'S strong hold. Germzone, three times a week, coupled with our simple directions for daily feeding, care and cutting slackers, is guaranteed to produce better and more permanent health and egg supply, or no pay.

One woman averaged 18 eggs daily from 21 hens in December. Germzone costs less than one cent per hen per month. See the profit.

Germzone cuts out the illnesses from musty or spoiled food, impurities picked up with food from food contagion through the drink, roup, colds, cancer, throat infection, sour crop, etc. Grows well with any modern method of feeding—grain, vegetables, meat.

SIXTY DAYS TRIAL—PAY IF SATISFIED. To those who agree to use it directed and pay if satisfied, we will send GERMZONE first time, 60 days trial, postpaid, without preliminary charge. Write today, stating how many hens you have. Germzone is sold by drug and seed stores in 75c and \$1.50 sizes.

GEO. H. LEE CO., Dept. 455 Omaha, Neb.

\$1.95 Buys 140-Egg Champion Belle City Incubator

Hot Water, Copper Tank, Double Water Board, Galv. Heated, with \$8.35 Freight Prepaid. Both only \$15.95.

Over 740,000 users.

My Special Offers provide ways to earn extra money. Order Now, or Write for Catalog.

It's Free and tells all. Jim Hogan, Pres. 103 Racine, Wis.

Belle City Incubator Co., Box 103, Racine, Wis.

200 EGG HATCHER COSTS ONLY \$3

No freight to pay. Actual cost covers everything. No losses, no expense, no costly materials. Over \$50,000 in sales. Thousands of testimonials. Agents wanted. Write for catalog.

Most Profitable Chickens, Geese, Ducks, and Incubators. Poultry Farm Book FREE.

Profitable chickens, geese and turkeys. Eastern raised, low prices. 26th year. Vol. 638. Catalogue free. Fruitaile Leghorn Farm Co., Zeeland, Mich.

producers of fresh eggs during this period of scarcity. The average poultry keeper cannot expect much profit from poultry keeping unless his hatching schedule provides for the hatching of pullets early enough to enable them to reach laying maturity before cold weather. There are exceptions, but this point is noted here for the sake of clearness and fairness. The average poultry keeper must depend upon the fall and winter-laying pullets for profit in poultry keeping for eggs.

3. What are the correct dates for hatching? The government does not answer this question. Inquiring poultry keepers are referred to the county agent. County agents, however, must give attention to general farming and stock raising, and they could hardly be expected to be "up" on all lines of special rural production.

The dates will undoubtedly vary in different sections of our vast country, and they certainly vary as to breeds.

Discussion of Dates

Fixing November the first as the date when all pullets should be laying, and this date will certainly apply to the great central belt of the country, the hatching date for this belt should be at least six months earlier, that is, May 1st. Where the heavier types are kept—Rocks, Reds, Wyandottes, Orpingtons—this date is somewhat risky for average farm conditions. These heavier breeds may be brought into laying in five months from hatching, but as this is accomplished by forcing—it is not to be received as a good practice. Laying stock should come along naturally, and many good pullets may not commence to lay until they are seven months old.

The proper hatching date can be worked out by any one who will determine the date of cold weather. This date having been determined, allow seven months for the heavy breeds and six months for the light breeds.

The date of cold weather is stressed because it is the date that should determine hatching dates. This cold weather date is the date when the spring pullets—all of them—should have reached laying maturity.

But early hatching is so apt to suggest February and March hatching that it is proper to utter a word of caution. Remember, hatching too early is almost as fatal to profit as hatching too late. This is due to the nature of the hen kind. A pullet hatched, say February 20, will reach laying maturity in September which in most sections of the country, is a month of summer heat. She will proceed to lay her pullet clutch of ten or fifteen eggs and then go into a mild molt, thereby taking her place with the old hens. She will come back into laying with the molting hens. This probably would not occur in Maine nor in North Dakota, but it would be almost certain to occur in Virginia and Missouri.

Reliable poultry writers sincerely aspire to give good advice to poultry keepers. They are prompted solely by the best interest of the industry. They are painfully aware that there are some readers who prefer accounts of unusual happenings in the poultry world. Such readers wish to believe what is agreeable or congenial.

The humble-minded, however, desire to know what is true. Applying this test to the subject of early hatching, every poultry keeper should review his practices. This is the time to work out plans for next fall. If any reader has carried over late-hatched pullets let him review his experiences. Go back to last spring: was the hatching done with the idea of producing pullets for fall and winter eggs, or was the hatching done just as any habitual thing is done?

If one hundred pullets are to be hatched from March 20 to April 20 an incubator will have to be used, for one hundred select pullets in laying by November 1st, means 400 eggs incubated during the period mentioned. And it is hardly reasonable to expect enough broodies at that season to take care of that many eggs.

A good incubator is an indispensable appliance in poultry keeping.

John David, Broadway, New York haberdasher, addresses his advertisements to women, not to men. He says, "A man's business is business. A woman makes a business of clothes. With her, clothes are first thought, second nature, sixth sense and seventh heaven; the birthright of the eternal Eye. She shops in and out of stores; he hops in and out of one store. She buys with both eyes on the goods; he buys with one eye on the clock.

"Hardie" Sprayers

Used wherever good fruit is grown. Big in everything except price. Large stock carried in all the principal fruit Sections of America. The most up-to-date Sprayers on the market.



Hardie Power Sprayers

have high duty engines built especially for spraying. Light in weight, long on horse power, easy to start, easy to understand; frost-proof with not a single delicate part.



Hardie Triplex Pump

The lightest running pump. Drop forged crank shaft, bronze bearings. No cross head—friction cut to the minimum. Bell metal ball valves, threadless valve cages, solid brass flanges, will outwear any pump made, give the biggest volume of liquid at the lightest pressure and cost less for repairs.

The Hardie regulator takes all the load off the engine when the nozzles are closed and holds the pressure right to the dot. This is real economy.

Hardie Orchard Guns

Will deliver to the tops of the trees a big cloud of penetrating spray that covers the tree thoroughly and quickly. One man with a Hardie Sprayer with the big capacity and high pressure and a Hardie Gun can do more spraying and do it better than two men with the old fashioned sprayers and long poles.

Hardie Hand Pumps

are made in a variety of sizes and styles. They have been on the market for 20 years and the first one ever made is not worn out yet. They have an upkeep cost record of only 2 1/8 cents per pump per year.

Send for the Hardie Catalog today. It tells the whole story.

The Hardie Manufacturing Co.
Hudson, Michigan

Trailmobile

Trade-Mark Reg. U. S. Patent Office

Fast, Inexpensive Hauling

The Motorless Motor Truck Thousands in Use

SIZES
1,250 lbs.
1,500 lbs.
2,000 lbs.
3,000 lbs.
4,000 lbs.
7,000 lbs.
10,000 lbs.
Also semi-trailers
Bodies for every
business.

RAWN by a light truck or passenger car the Trailmobile brings distant city markets into easy reach, saves time moving fruit to the railroad—does all kinds of hauling quickly and at low cost.

His Trailmobile enabled Jasper Chalfant, Milford, Ohio, to market 1,000 bushels of apples in Cincinnati without expense for barrels, packing or commissions. He also hauls cord wood, farm and orchard supplies.

His light passenger car hauls the Trailmobile at high speeds over all kinds of roads and takes the steepest hills. The cost is only slightly more than for the car alone.

Trailmobiles are built by automotive engineers for fast travel with full loads. They track perfectly at any speed and don't sidesway.

Write for booklet, "Economy in Hauling"

The Trailmobile Co., 507-527 E. Fifth St., Cincinnati, O.
Contractors to the U. S. Government



Good roads are preserved by reducing the load that is carried on each wheel.

Prevent Worm Eaten Fruit by Using the

STANDARD SPRAY PUMP

The Universal Sprayer of a Hundred Uses



This simple, powerful, all brass Sprayer really "pours" parasites because it sprays both sides of the leaves; penetrates all crevices even to the very tops of the highest trees. Operated from ground. Attached to Knapsack (at small extra cost) it sprays field and garden and has your own effective nozzles for spraying live stock, for disinfecting and whitewashing. Hardware dealers and Seedsmen sell the Standard. If unobtainable at your dealer's, write us. Price \$5.00 prepaid, West of Denver and in extreme South \$5.50. Send today for Catalog D

THE STANDARD STAMPING COMPANY, 354 Main St., Huntington, W. Va.

I Want to Send You My New GATE BOOK

of "Can't Sag" Gates

FREE!

Just send me your name and address. I will mail you my big new Gate Book free—postpaid. Quotes prices over than it costs you to build homemade all wood gates. Can't Sag Gates are the only farm gates that are **GOOD Enough to Use ANYWHERE CHEAP Enough to Use EVERYWHERE**

Always hang straight and true. Never sag, drag or warp or twist out of shape. No metal used. No wood joints. Every board double bolted between eight angle steel uprights. Self-locking—no iron—won't injure stock—easily repaired—outlast several all wood, metal and wire gates. Cost less than any other gates you can build or buy. Many a million now in use. Write for free Catalog today.

(1) ALVIN V. ROWE, President
ROWE MFG. CO., 291 Adams St., Galesburg, Ill.

30 Days FREE Trial

No plumbing. Odorless. Sanitary. Endorsed by State Health Boards. Buy Direct from the Maker

The Kawnear

Sent fully equipped. Anybody can set it up. No daily attention. Guaranteed 10 years. Makes home up to date opportunity. Write at once. Try a Kawnear in your own home 30 days FREE.

FREE Book Send your name and address for illustrated book and 30 days' free trial offer. No obligations to you. It's free. Write today.

Federal Sash & Door Co., Dept. 2021 Kansas City, Mo.

Kindly Mention American Fruit Grower when writing to Advertisers

Live Stock and Dairy

DIPS CHEAPER THAN TICKS

That big dividends follow investments in cattle-tick eradication is shown by investigations during the last year by the United States Department of Agriculture. The expense of permanently freeing cattle from ticks is repaid from 20 to 50 times. The cost of making the necessary number of dippings varies from only 18 to 50 cents for each animal, and one canvass showed an average estimated increase of \$9.76 in value of the tick-free cattle. More than that, the eradication of the ticks, as conducted under Federal supervision, permits the introduction of high-class beef and dairy cattle and the establishment of a more profitable livestock industry. Emphasis is placed by the department on the need for a clear understanding of the purpose of tick eradication and the necessity for strict compliance with regulations to insure thoroughness. By co-operating with the Government in the work farmers receive the numerous benefits resulting from the opportunity for great improvement in their herds.

NEW BREEDING CHART

It has long been a matter of observation that by far the greater number of pictures on the subject of stock breeding are for the fancier—for the man who is interested in a certain type developed to a high degree of excellence.

The owner of a \$10,000 bull, a blue ribbon hog, or a ram that takes the prize has his picture taken and in time it becomes an exhibit in breeder's literature.

This is all very well for the breeder who takes up stock raising as a science. However, most of those who are raising and feeding cattle, hogs and sheep are doing it as a commercial proposition. For the man more interested in dollar marks than cattle judges' decisions, there is, it must be confessed, very little profitable literature. In pictures of magnificent types of prize animals, the farmers' interest has naturally been largely from the theoretical standpoint. There has been a very positive need for authoritative pictures of standard meat producing types of cattle and other livestock.

The new Breeder's Chart and Calendar published by Armour & Company, is a decided departure. Here are pictured, for the first time as far as we can learn, not the show animal but the ideal commercial types, the kind of cattle, sheep and hogs that bring the prize in the shape of good, honest greenbacks to the man who ships his car to the selling pen.

This Calendar is a part of the Armour effort to induce the breeding of "more and better livestock," and because of its practical utilitarian value, should be in the hands of every American livestock grower. There is no attempt made to picture show animals, but the illustrations are confined to visualizing those types which the farmer will find it most profitable to raise and which will market to best advantage for him. With the pictures, which are in colors and true to life, there is a wealth of reading matter, boiled down practical information on such subjects as Profit-Breeding, Dual Purpose Cattle, Feeding for Market, Hogs and Cattle on the Same Pasturage, Preparation for Shipping, Market Opportunities of "Baby Beef," etc.

In other words, here is a buyer telling the seller what he wants to buy. It is evidently an effort to put the stockraiser in a position where he can say "Here is what you want" instead of "What will you give me?"

It is reasonable to suppose that no business institution would get out an expensive item like this "Breeder's Chart and Calendar" without some selfish motive and in this instance one does not have to look far to find it. It certainly costs Armour no more to buy, kill, dress, ship, and market good meat than poor, while the advantages are many. And since their effort is to grade up the breeder's stock, we recommend that you send for this Chart and Calendar. It is well worth while.

VALUE OF MANURE PITS

Farmers who think that manure pits are an expensive luxury should remember that manure stored in the old-fashioned way is subject to loss both by leaching and decay, which in six months amounts to from 30 to 60 per cent of the total volume of its constituents.

Dont Send a Penny

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

Great Shoe Offer

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them to you at once, no money down. You will find them so well-made and so stylish and such a big money saving bargain that you will surely keep them. No need to pay higher prices when you can buy direct from us. Why pay \$6 and \$8 for shoes not near so good?

These Low-Mort Work and Outdoor Shoes are such wonderful value that we will gladly send them



Here's Sound Pruning Advice

You can "make or break" your fruit or flowers by pruning. Here is a pruning book you need—"The Little Pruning Book," brimful of practical advice. It tells how, when and where to prune for strong, healthy growth.

Send for free circular, or better still send 50 cents for the book. Your money refunded if not satisfactory.



The Peck, Stow & Wilcox Co., Cleveland, Ohio

Address correspondence to 2189 W. Third St., Cleveland, Ohio

100% American for 100 Years (Founded 1819.)

PEXTO PRUNING SHEARS



Land clearing fully explained

After you have read the chapter on "Better Stump Removing" in our book, "Better Farming with Atlas Farm Powder," you will know how easily and quickly you can clean up your fields. After you have blasted a few stumps you will feel like Harry A. Wright, Williamsburg, Mass., who writes:

"Now I know that land which I cleared by grubbing could have been cleared with Atlas Farm Powder more easily and at one-quarter the expense. I never dared tackle the stumps on part of my land before, but now I am getting the stumps out and planting it to trees."

"Better Farming with Atlas Farm Powder" also tells how to remove boulders, blast the subsoil and beds for trees, make ditches and do other farm jobs with Atlas Powder. A copy—sent free—will be a valuable addition to your library. The coupon at the right will bring the book.

ATLAS POWDER CO., Wilmington, Del.
Dealers everywhere. Magazine stocks near you.

Atlas Farm Powder
THE SAFEST EXPLOSIVE
The Original Farm Powder

ATLAS POWDER CO.,
Wilmington, Del.

Send me "Better Farming with Atlas Farm Powder." I am interested in explosives for the purpose before which I mark "X."

- Stump Blasting
- Boulder Blasting
- Subsoil Blasting
- Tree Planting
- Ditch Digging
- Road Making

FL 6

Name _____

Address _____

Tractors Trucks and Engines



What Will a Tractor Pull?

IN ATTENDING a tractor show and noting the interest manifested by prospective buyers the writer observed that almost the first question asked was: "How many plow bottoms will this tractor pull?"

It would seem to be just as pertinent to ask: "How big is a horse?"

There is such a wide variation in soils in different localities, and such a difference in conditions of the same soil at different seasons, that the first question can hardly be answered intelligently.

that to overwork a power plant is just as foolish as to overwork a horse. The greatest economy in operation is to have a reserve power. It is far better to use three plows on a tractor that will pull them easily than to add the fourth and work the engine to the very limit.

Increasing the Value of Land with Motor Truck

At first thought almost anyone would be inclined to disagree with the statement that



A Motor Truck is the Modern Way of Hauling Fruit

If a given type of tractor will pull four bottoms plowing 8-inches deep in loose soil in the very best condition for plowing, it must not be expected that it will pull four bottoms in any kind of soil at any time of the year. In fact this same tractor might do well to pull two bottoms under certain conditions.

We feel that we cannot too strongly emphasize the necessity of a careful investigation before buying a tractor, and the importance of selecting the type and size adapted to the majority of the work it is expected to do.

It should also always be borne in mind

a motor truck would increase the value of land.

But it will do, and does, that very thing. It doesn't do it, to be sure, in the way that statement is made if allowed to go unqualified. What makes the difference in the market value of land lying just outside the limits of a city or good town and exactly the same kind of soil ten or fifteen miles removed from the city or town. Given the same treatment, acre for acre, one will produce as well as the other.

This may sound like primary school stuff, and some will say "anybody knows that a piece of land next to the city

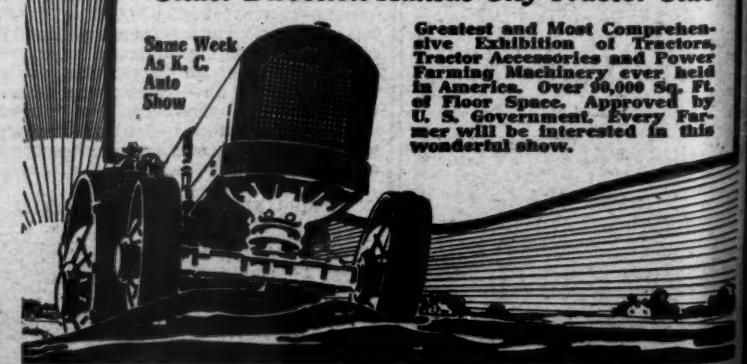
Select Your Tractor at the
FOURTH ANNUAL

National Tractor Show

Kansas City, Feb. 24 to March 1, 1919

Under Direction Kansas City Tractor Club

Greatest and Most Comprehensive Exhibition of Tractors, Tractor Accessories and Power Farming Machinery ever held in America. Over 90,000 Sq. Ft. of Floor Space. Approved by U. S. Government. Every Farmer will be interested in this wonderful show.



worth a lot more than one far removed." The land adjoining a city becomes valuable, of course, mainly because it can be used for residence purposes for people working or conducting business in the city, or for factory sites.

One illustration will make our statement clear. The writer knew of a man engaged in gardening and small fruit growing who owned ten acres. He bought it at a time when land was comparatively cheap and when the near-by town was comparatively small. But the town grew to a moderate sized city and it pushed out its borders until he was almost surrounded by the city. The growing city made a good market for his produce, but his land would not produce any more than it did when its market value was much less, but his taxes increased as the value of the land went up.

He was six miles from the market, which meant that it took him from one and one-half to two hours to go to market.

He was offered \$2,000 an acre for his little farm. He felt that he could not afford to keep it and yet he was making a good living on it. He did not want to retire for he was still strong and active. Also, his growing family had increased his living expenses and by the time he would buy a decent home the interest on the balance of the \$20,000 would make them live pretty close.

On investigation he found where he could buy ten acres twelve miles out of the city at \$200 an acre. He bought it, spent \$5,000 for buildings which were far better than he had before, bought a good motor truck for which he paid \$2,500. He had a snug sum left to invest in interest-bearing securities, and as he could reach the market in the same or less time, and do it much more comfortably, he was better off and his \$200 land was worth just as much for his business as the \$2,000 land.

It is almost needless to add that out of the surplus fund this man also provided a passenger car which enabled anyone or all of the family to go to the city in less than an hour or to go any place they wanted to go when the time could be spared.

Broadly speaking the motor car—passenger and freight—have eliminated distance and increased the value of land lying distant from the town.

Grubbing Stumps With a Tractor

Who of our readers has had experience in pulling stumps with tractors? We have an inquiry from Chas. M. Bloxham, No. 12 Beechwood Ave., Verona, N. J., which we are frank to say "stumps" us. He writes as follows:

Can you tell me or direct me where I may get the information as to use of Tractor in clearing land.

I am interested in clearing "Block Jack" land in the Sand Hill section of North Carolina. There is a scattering growth of oaks—white—red—black-jack and small pine of 2 inches and 6 inches diameter—a few large trees.

My thought is to chop off this growth close to ground—remove by pullers or burning the large stumps and then by tractor hauling—a grubbing device made something like a gang of plows—just yank out these grubs or stumps as fast as a gang of men could pick them up.

Do you know of this being done?

Do you know of any such grubbing tool? Do you know of any experiment along this line?

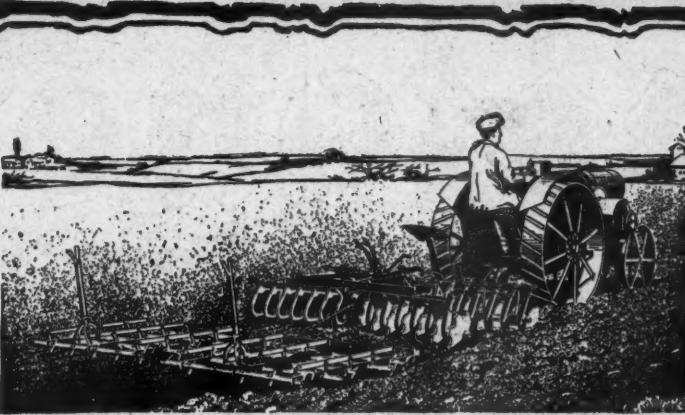
What do you think of the idea? Practical?

Would you in addition to giving your views refer this to Mr. Art. E. Walker of Colorado, who seems to have good common sense of the Tractor subject?

Not having had personal experience in this kind of work we are unable to give a satisfactory answer. We are strongly of the opinion, however, that the capacity of tractor that a man would want for ordinary farm work would not fill the requirements. It is the writer's opinion that it would be necessary to use some such device as a regular stump puller where a compound purchase could be had. In that case the light tractor could furnish the power.

The Seed Reporting Service gives figures showing a greatly increased foreign demand for seed. The principal seed varieties are lead by garden pea seed followed by beet seed. Lettuce, onion, carrot, parsnip and radish also show substantial increase in demand.

The Rural New Yorker states that the boys and girls of New York state had 50,000 gardens last year, and this year an effort will be made to secure 300,000, each pledged to grow \$10 worth of products.



International Tillage Brings Bigger Yields and Better Grades

MANY are the uses, and great is the value of a good disk harrow. More than any other farm tool, its proper use takes the gamble out of crop raising. The perfect seed bed that causes quick, strong germination of the seed, rapid growth of the plant, and even maturing of the crop, cannot be made without a disk harrow. A good one costs so little, and plays such an important part in determining the yield and value of your crops, that its purchase deserves really serious consideration.

Knowing the character and condition of your soil as you do, you will know whether to buy a two or three-lever harrow, a tandem, or one of our new leverless tractor disks, but, whichever style is best for your work, you will find a high-grade, up-to-date harrow of that style in the International line, and of a size, suitable to your power equipment. We have sold disk harrows for years, but never was the line so complete, or of such high quality, as the line we offer for 1919. The local dealer will explain the value of the many features we have not space to mention here.

Other useful implements in this line, each built for its own special work, are open end, closed end, and flexible peg-tooth harrows, spring-tooth harrows with single and double end teeth, and one-horse cultivators with every kind of tooth and shovel equipment. These, too, can be seen at the local dealer's place of business, or we will send catalogues on request.

Glance over the list of machines in this advertisement and write us for full particulars about any in which you may be interested.

International Harvester Company of America
(Incorporated)
CHICAGO

The Full Line of International Harvester Quality Machines

Grain Harvesting Machines

Binders	Push Binders
Headers	Rice Binders
Harvester-Threshers	Reapers
Shockers	Threshers

Tillage Implements

Disk Harrows	
Tractor Harrows	
Spring-Tooth Harrows	
Peg-Tooth Harrows	
Orchard Harrows	Cultivators

Planting and Seeding Machines

Corn Planters	Corn Drills
Grain Drills	Broadcast Seeders
Alfalfa and Grass Seed Drills	Fertilizer and Lime Sowers

Haying Machines

Mowers	Side Delivery Rakes
Comb. Side Rakes & Tedders	Tedders
Baling Presses	Rakes
Sweep Rakes	Stackers
Comb. Sweep Rakes & Stackers	Bunchers

Belt Machines

Ensilage Cutters	Corn Shellers
Huskers and Shredders	
Hay Presses	Stone Burr Mills
Threshers	Feed Grinders
	Cream Separators

Power Machines

Kerosene Engines	Gasoline Engines
Kerosene Tractors	
Motor Trucks	
Motor Cultivators	

Corn Machines

Planters	Motor Cultivators
Drills	Ensilage Cutters
Cultivators	Binders
Shellers	Pickers
	Husker-Shredders

Dairy Equipment

Cream Separators (Hand)	
Cream Separators (Belted)	
Kerosene Engines	
Motor Trucks	Gasoline Engines

Other Farm Equipment

Manure Spreaders	
Straw Spreading Attachment	
Farm Wagons	Stalk Cutters
Farm Trucks	Knife Grinders
Tractor Hitches	Binder Twine



ONE MILLION
California Privet and Asparagus plants. Millions of trees and shrubs, etc. Healthy; true to name; quality high; price low. New Planters Price List ready.
THE WESTMINSTER NURSERY,
Box 50
Westminster, Md.

Valuable Fruit Farm FOR SALE: 240 Acres, having ideal contour, insuring perfect air drainage. Situated in Southeastern Pennsylvania and within short haul of a live home market for all its products. Apple, Peach, Pear, Plum, Quince and Cherry trees planted in 1912 are now beginning to bear. One of the best young orchards in the state. Fifty acres is in fruit; balance beautiful rectangular fertile fields. Modern cow stable just finished, water supply, silo, hen house, large creek, etc.
C. E. KREMER, 1423 Vine St., Philadelphia, Pa.

STRAWBERRY PLANTS THAT GROW"

Best June and Fall-Bearing Strawberries at Reasonable Prices. Also Raspberry, Blackberry, Currant and Grape Plants in Assortment. Catalog FREE.

C. E. WHITTEN'S NURSERIES, Box 9, Bridgman, Mich.

EVERBEARING STRAWBERRY PLANTS

All Kinds of Small Fruit
My Everbearers Produce Big Crops 4 months of the year. Easy to Grow, Healthy Stock, FREE—My Special Surprise—Reasonable Prices.

J. H. ROELEY, Box 9, Bridgman, Mich. 1919 Catalog

GIANT TOMATO-CUCUMBER-PEANUT-10c

Here Are Seeds of Three Valuable and Interesting Varieties You Should Grow

In Your Garden This Year.

Giant Climbing Tomato—Is one of the largest grown. Vines grow very strong and will carry an enormous weight of fruit, very solid, crimson color; specimens often weighing 2 to 3 lbs. each.

Japanese Climbing Cucumber—Is a grand variety from Japan; grows 10 to 15 inches long, and are good for slicing or pickling.

Early Spanish Peanuts—Earliest variety and a great Peanut for the North; easy to grow, enormous yield, and a few hills in your garden will be very interesting to show your neighbors.

Special Offer: I will mail one regular sized Packet of Tomato, Cucumber and Peanut for only 10c, or 3 Packets for each for 35c. My new Seed Book of Garden Seeds is broader free. Order TODAY.

F. B. MILLS, Seed Grower, Dept. 23 Rose Hill, N.Y.



ROSES of New Castle

FOR hardy, vigorous, free-blooming rose-plants get Roses of New Castle. Grown on their own roots in fertile soil. We are expert rose growers with a lifetime of experience back of us. Every desirable rose in cultivation included in our highly select list—an immense stock at right prices. Our rose book for 1919, "Roses of New Castle," is a complete book on rose culture. Contains information and advice that will help you. Elaborately printed in colors. Send today for your copy—a postal will do. Address

SELLER 2204, 60, Box 200, New Castle, Ind.

Firestone Tire Accessories

Get This Blow-Out Patch

THE Firestone blow-out patch performs both duties, it holds the blow-out securely and protects the inner tube while in casing.

Built of six plies of rubberized fabric, it is flexible and yielding. It is protected at both ends by a molded-in real rubber tip, originated by Firestone, which does not allow the tube to come in contact with the raw, rough edges of the fabric. It is wide enough to extend from bead to bead. It is curved to fit snugly the inside dimensions of case and cannot buckle, see illustration.

Authoritative figures show that one in every four car owners prefer Firestone blow-out patches. Firestone will make 5 million of the 20 million to be sold this year.

Prepare for most miles per dollar and least trouble per mile by getting this patch and other Firestone Tire Accessories from your dealer.

FIRESTONE TIRE AND RUBBER CO.
FIRESTONE PARK AKRON, OHIO

World's Largest Manufacturers of Tire Accessories and Repair Materials



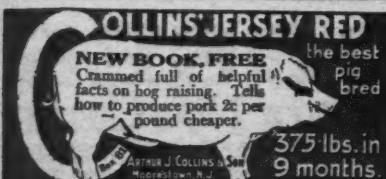
Paint Without Oil

Remarkable Discovery That Cuts Down the Cost of Paint Seventy-Five Per Cent.

A Free Trial Package is Mailed to Everyone Who Writes.

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powderpaint. It comes in the form of dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 12 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.



Buy Your Roofing Needs Now!

Order Direct From This List Today!

This is your big chance to buy prepared roofing, metal roofing and siding at prices that will not be equalled in economy for some time to come. But you must not delay. Quick action is necessary, for the supply of these bargain lots is limited. Read them carefully, mail order quickly.

SPECIAL SNAPS FOR THIS SALE!!

Ajax high-grade rubber surfaced roofing, put up 108 sq. ft. to the roll. Complete, with nails and cement, No. JF-302, 2-ply, per roll, \$1.27; 2-ply, per roll, \$1.17; 1-ply, per roll, \$1.07.

Rawhides stone-faced Gold Medal Roofing, guaranteed 25 years. Rolls contain 108 sq. ft., nails and cement included. No. JF-303, per roll, \$2.20.

Our Famous Rawhides Rubber Roofing, 3-ply, guaranteed for 12 years; a high grade covering. Rolls contain 108 sq. ft., nails and cement included. No. JF-304, 2-ply, per roll, \$1.64; 1-ply, per roll, \$1.20.

10,000 rolls of extra heavy high grade roofing, red or gray slate coated, rock-faced, brown papille coated, double sanded, mineral or mica surfaced. No. JF-305, per roll of 108 sq. ft., nails and cement included, \$1.94.

Corrugated Metal Sheets \$2.00 Per Square

28-gauge painted 2½ in. corrugated, overhauled siding sheets, 5½ ft. long. No. JF-306, per 100 sq. ft., \$2.00.

26-gauge painted 2½ in. corrugated, overhauled roofing sheets. No. JF-307, per 100 sq. ft., \$3.00.

24-gauge extra heavy painted, 2½ in. corrugated, overhauled sheets for roofing barns, granaries, etc. No. JF-308, per 100 sq. ft., \$3.50.

HARRIS BROTHERS CO., 35th and Broad Streets, Dept. JF-215, CHICAGO



Kindly mention American Fruit Grower when writing to advertisers

American Fruit Grower

C. E. Bassett Goes to North American

Few men enjoy such a general acquaintance among the fruit growers of America as does Charles E. Bassett—practical fruit grower, market specialist and organizer of co-operative shipping associations. Following a long and successful fruit growing experience at Fennville, Mich., and acting for 15 years as secretary of the Michigan Horticultural Society, he entered the United States Bureau of Markets at Washington as a specialist in co-operative organization work and also qualified as a specialist in marketing perishables. Five years of this work has brought him in close touch with practically every fruit and vegetable producing section of the United States.

Now comes the announcement from Washington that Mr. Bassett has resigned, to take up active marketing work as Director of Field Organization with the North American Fruit Exchange with headquarters at 90 West Street, New York City. In explaining this change Mr. Bassett said:

"In trying to work out plans to meet the difficulties of farmers shipping associations in selling their products, my attention was attracted to the sales service rendered for such associations and large shippers by the North American Fruit Exchange. I believe that the North American comes nearer meeting the requirements of a selling organization, at a less cost per package, than is furnished by any other means."

"I was so thoroughly convinced of the efficiency of the North American Fruit Exchange and of its ability to save money to its patrons that an invitation to become associated with it in the conduct of its business appealed to me as a greater opportunity to serve those who are trying to develop better marketing methods."

LARGE OSAGE ORANGE

It is very rarely we find an osage orange tree as large as the one in the photograph. This tree is at Troy, O., and it measures nearly 30 feet in height and is about two feet in diameter at the base.



Osage Orange Tree at Troy, Ohio
Summer 1918

One of the toughest of woods is that of the so-called osage orange, which, however, is not an orange at all, but belongs to the nettle family. Some idea of its strength may be had from a report made not long ago by the forest service, which shows that a block 30 inches long and two inches by two inches in cross sections, when bent, breaks under a stress of 13,666 pounds.

DE ROOSTER

De Rooster ain't got much tu du
But stand aroun' an' crow,
'Cept 'nother rooster kums aroun'
Den there's a fite U know.
An' den tu scrap is hiz deelife—
(So jealous duz he seem)
He'll fite an' fite till almost ded—
De fitin' spirit's mean.
Albert E. Vasson, St. Louis.

er
es
rican
acquaint-
America
practical
d organiza-
tions.
it grow-
ch., and
y of the
e entered
markets at
operative
ied as a
s. Five
n in close
and vegeta-
United
nt from
resigned,
work as
with the
ge with
t, New
nge Mr.

to meet
ng assos-
my at-
s service
nd large
n Fruit
the North
the re-
on, at a
ished by

d of the
n Fruit
e money
become
et of its
ater op-
e trying
ods."

the orange
tograph.
measures
out two

for February, 1919

Page 49

Use Our Service Department

Our Motto is:—*Service To Our Subscribers.* Having this in mind we have listed below a number of Clubs in which we have included the leading magazines of the country. We can save you money, time and worry. We know it is a big task for you to order your reading matter when you are obliged to send an individual order to each publication, but by ordering your magazines through us, you do away with this trouble and also save money. Pick out the Club you want and mail your order today. DO IT NOW! Because the prices of magazines are going up and we cannot guarantee the Club rates for any special length of time.

Note the Saving on These Offers

OFFER A.
McCall's Magazine..... 1 yr. \$1.00 Our Price
AMERICAN FRUIT GROWER..... 1 yr. .50 \$1.50
Today's Housewife..... 1 yr. .75 You Save
Total..... \$2.25

OFFER B.
Youth's Companion..... 1 yr. \$2.00 Our Price
Woman's World..... 1 yr. .50 \$2.50
AMERICAN FRUIT GROWER..... 1 yr. .50 You Save
Total..... \$3.00

OFFER C.
Farm and Fireside..... 1 yr. \$.25 Our Price
AMERICAN FRUIT GROWER..... 1 yr. .50 \$1.15
McCall's Magazine..... 1 yr. 1.00 You Save
Total..... \$1.75

OFFER D.
AMERICAN FRUIT GROWER..... 1 yr. \$.50 Our Price
Farm and Home..... 1 yr. .25 \$1.15
Today's Housewife..... 1 yr. .75 You Save
Total..... \$1.50

OFFER E.
Woman's Home Companion..... 1 yr. \$2.00 Our Price
Boys' Magazine..... 1 yr. 1.50 \$3.25
AMERICAN FRUIT GROWER..... 1 yr. .50 You Save
Total..... \$4.00

OFFER F.
Gleanings in Bee Culture..... 1 yr. \$1.00 Our Price
American Poultry Advocate..... 1 yr. .50 \$1.50
AMERICAN FRUIT GROWER..... 1 yr. .50 You Save
Total..... \$2.00

OFFER G.
Girls' Companion..... 1 yr. \$.50 Our Price
Hoard's Dairyman..... 1 yr. \$1.00 \$1.50
AMERICAN FRUIT GROWER..... 1 yr. .50 You Save
Total..... \$2.00

OFFER H.
Modern Priscilla..... 1 yr. \$1.50 Our Price
Little Folks Magazine..... 1 yr. 1.50 \$2.50
AMERICAN FRUIT GROWER..... 1 yr. .50 You Save
Total..... \$3.50

OFFER I.
Collier's Weekly..... 1 yr. \$2.50 Our Price
Girls' Companion..... 1 yr. .50 \$2.60
AMERICAN FRUIT GROWER..... 1 yr. .50 You Save
Total..... \$3.50

OFFER J.
Kimball's Dairy Farmer..... 1 yr. \$.70 Our Price
Successful Farming..... 1 yr. .25 \$1.20
AMERICAN FRUIT GROWER..... 1 yr. .50 You Save
Total..... \$1.45

These prices include a year's subscription to the AMERICAN FRUIT GROWER and the magazine mentioned:

American Boy.....	\$2.25
American Magazine.....	2.25
Breeder's Gazette.....	1.75
Christian Herald.....	2.00
Delineator.....	1.75
Designer.....	1.75
Etude.....	2.00
Garden Magazine.....	2.25
Everybody's Magazine.....	1.75
Holstein-Friesian Register.....	1.50
LaFollette's Magazine.....	1.25
Michigan Farmer.....	1.25
National Stockman and Farmer.....	1.25
Ohio Farmer.....	1.25
Pathfinder.....	1.30
Pennsylvania Farmer.....	1.00
Pictorial Review.....	2.25
Rural New Yorker.....	1.25
Young People's Weekly.....	1.15
Youth's Companion.....	2.25

Add 50c extra to any of these offers and the *American Fruit Grower* will be sent three years. Other publications one year.

CLIP
COUPON

AMERICAN FRUIT GROWER,
329 Plymouth Court,
Chicago, Ill.

Gentlemen: Inclosed fine \$..... for which send me a year's subscription to the AMERICAN FRUIT GROWER and the following magazines:

Other Papers.....

Other Papers.....

Other Papers.....

Name.....

St. or
R. D.

P. O. State.....

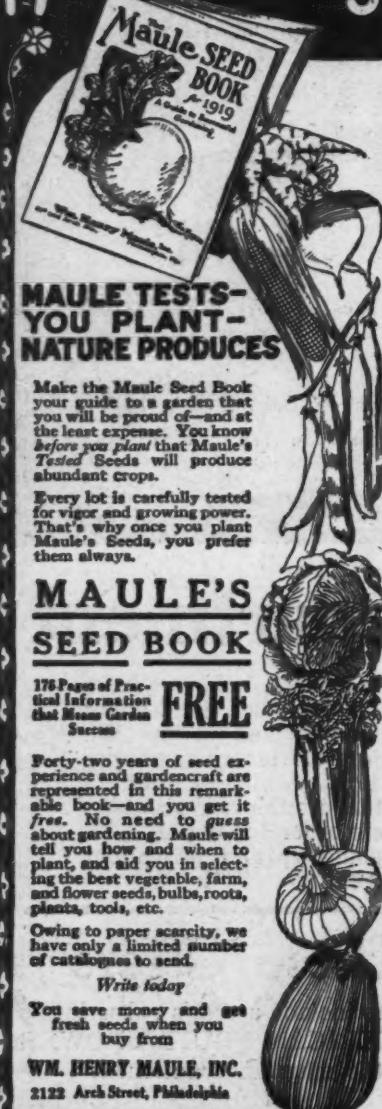
NOTE—If you are already a subscriber to the American Fruit Grower, your subscription will be extended from expiration date to old subscription. Remember this offer is good for 30 days only.

Don't Delay

SEND YOUR ORDER TODAY

CLIP
COUPON

MAULE'S SEEDS

MAULE TESTS—
YOU PLANT—
NATURE PRODUCES

Make the Maule Seed Book your guide to a garden that you will be proud of—and at the least expense. You know before you plant that Maule's Tested Seeds will produce abundant crops.

Every lot is carefully tested for vigor and growing power. That's why once you plant Maule's Seeds, you prefer them always.

MAULE'S
SEED BOOK

176 Pages of Practical Information that Mean Garden Success
FREE

Forty-two years of seed experience and gardencraft are represented in this remarkable book—and you get it free. No need to guess about gardening. Maule will tell you how and when to plant, and aid you in selecting the best vegetable, farm, and flower seeds, bulbs, roots, plants, tools, etc.

Owing to paper scarcity, we have only a limited number of catalogues to send.

Write today

You save money and get fresh seeds when you buy from

WM. HENRY MAULE, INC.
2122 Arch Street, Philadelphia

ONCE GROWN—ALWAYS GROWN

VICK'S
GARDEN & FLORAL
GUIDE FOR 1919

IT'S FREE! Several New Features. WRITE TODAY
Based on our experience as the oldest mail order seed concern and largest growers of Asters and other seeds in America. 550 acres and 12 greenhouses in best seed growing section. Our Guide is full of helpful information about planting, etc.—an invaluable aid to a successful gardener. Illustrates and describes flowers, vegetables, farm seeds, plants and fruits. This book, the best we have issued, is yours, absolutely free.

Ask for your copy today before you forget.

JAMES VICK'S SONS
15 Stone Street, Rochester, N. Y.
The Flower City

Livingston's SEEDS
"TRUE BLUE"

Make better gardens. All are tested for purity and vitality. Have been giving satisfaction for over 50 years. Be sure and try our
5 FINE VEGETABLES, 10c
One large packet each of Bean, Beet, Lettuce, Radish and Tomato—postpaid. All are heavy yielding and exceptionally fine in quality. Try them.

Large CATALOG FREE
Gives helpful cultural directions and offers strictly high-grade seeds at favorable prices. For your free copy to-day, LIVINGSTON SEED CO., Box 844 Columbus, Ohio

SUDAN GRASS
Wonderful New Hay Plant. Yields more tonnage per acre than any other grass. Grows quick. We will send free, upon request, a sample of the seed, booklets of information, 120-page illustrated catalog, and special rates in cities. Not offering lowest prices. Address
IOWA SEED COMPANY
Dept. 18
Des Moines, Iowa



Plant a Victory Garden

By J. T. Rosa, Jr.

THE SEASON for making plans for our vegetable gardens is at hand. This year we are asked to grow "Victory Gardens" to help feed a hungry world. Gardeners everywhere will respond to the new appeal just as patriotically as they did to the call for "war gardens."

The Garden Plan

Every gardener will get greater returns from his garden by making a plan for it before the planting season begins. It will save much time and trouble in planting and handling the garden, and will make the work much more convenient, efficient and satisfactory.

of the various vegetables, so that those which can be planted about the same time and which require similar cultural conditions can be handled as a unit.

Plant Four Groups

About four groups can be made, which are planted on successive dates, two weeks apart during the spring, thus simplifying the garden work and avoiding confusion about the proper time to plant the various crops. The first group should consist of the perennial crops. Asparagus, rhubarb, horse-radish, various herbs, etc., which should occupy a plot along one side of the garden, where they will not interfere with



A Well-Planned Back-Yard Garden. Rows Close Together, Everything in Straight Rows

The first point to consider in planning the garden is to secure a plot which is not heavily shaded by trees or buildings, which is well drained and clear of weeds and rubbish. Next consider the shape of the garden, if possible have it longer than wide, and lay off the rows the long way. The space between rows can be regulated to suit the various crops. Thirty inches is about right for large bush plants like potatoes, peppers, tomatoes, etc., while twelve to eighteen inches apart is sufficient for small crops like lettuce, spinach, onions, etc., in small gardens where all cultivation is by hand tools. In larger gardens the rows should all be 30 to 36 inches apart to allow the use of horse cultivators.

Another important point is the grouping

preparation of the rest of the land for the annual crops. Plants for these crops may be set in the fall or early spring.

The next group is the first spring planting, placed alongside the perennial group, and sown just as early as the soil can be worked. Onions, lettuce, radish, turnips, spinach, kale, early potatoes and early peas should be planted at this time. The next group consists of semi-hardy crops like beets, carrots, parsnips, snap beans, and plants from the hotbed, such as cabbage, cauliflower, celery, head lettuce, etc., should be set at this time. All of these plants will stand some frost in the ground after being planted.

The fourth group should not be planted until the weather has become quite warm

Rhubarb	Herbs
Onions - "Yellow Globe Danvers" (sets)	
Spinach - "Savoy"	Turnips - "Purple-topped Vienna"
Leaf Lettuce - "Grand Rapids"	Radish - "White-tipped Scarlet"
Early Garden Peas - "Alaska"	
Early Irish Potatoes - "Irish Cobbler"	
" "	" "
Beets "Detroit Dark Red"	Carrots - "Oxheart"
Early Cabbage "Copenhagen"	85 plants (Head lettuce between plants)
Early Snap Beans "Burpee Stringless Greenpod"	
Early Sweet Corn - "Golden Bantam"	
Tomatoes - "Bonny Best"	60 plants - stated.
" "	" "
Peppers - "Ruby Giant"	16 plants x Eggplants 10 plants
Late Sweet Corn "Country Gentleman"	
Late Snap Beans - "Refugee Wax"	

Plan of Back-yard Garden

45x50 Ft.

You Need This Book

in making up your garden planting list. From cover to cover, it contains with true-to-life pictures and descriptions of the choicest vegetables. It is a safe guide in selecting varieties either for home or market.

Gregory's "Honest Seeds" have been the first choice of particular gardeners for 20 years. They are thoroughly tested for vitality and purity—carry "blood" lines long controlled by scientific plant breeding.

Send for your copy today—free!

For Quality and Quantity

Plant Carpenter's Giant Golden Sweet

It's as delicious as the famous Golden Beet and much larger, maybe 10 to 12 inches long. Yet it ripens early 8 days later. It does not become mushy but remains sweet and succulent until too hard for the table. The stalks grow 6 ft. high, bearing one or three ears each. Large pkt., 16c; 2 lbs., 36c; 2 lbs., \$1.00 postpaid—Order now and ask for our big free catalog.

J. J. H. GREGORY & SON



SPECIAL PRICES ON CLOVER

Clover is a necessity on every farm. To do without because seed is scarce is a false economy.

Fortunately we are located in the heart of the Timothy and Clover section of the Northwest and can save you money.

No freezing out or weeds to fear in "Farmer Brand" northern grown Clover, Timothy and Alfalfa.

Write for new illustrated seed book and special blue figure price list. Describes everything we grow.

FARMER SEED & NURSERY CO.,
201 1st Ave., FARIBAULT, MINN.

OLDS' White Beauty



OLDS' Catalog

TELLS THE TRUTH

Olds' White Beauty is a new potato, now offered for the first time. It is very productive, yielding well-known standard sorts, smooth and handsome and of very superior quality.

Write for Catalog

describing and illustrating this and other varieties Potatoes, Corn, Oats, Wheat, Barley, Spelt, Soy Beans, Millet, Clover, Alfalfa, Timothy, Garden Seeds, Flower Seeds, Bulbs, Plants, Tools, Etc.

ASK FOR FREE SAMPLES

High-Grade Field Seeds, showing purity and germination tests. Mention those interested in.

L. L. OLDS SEED CO., MADISON, WIS.



THE MOORE SEED CO.,
125 MARKET ST., PHILADELPHIA, PA.

SWEET CLOVER

White Blossoms: the greatest money-making crop of today. Big money for the farmers who grow it. Builds up land rapidly and produces heavy, money-making crops when doing it. Excellent pasture and hay: innoculates land against alfalfa. Easy to start: grows on all soils. Our best and best scurified, bullet, high-germinating and tested. Quality guaranteed. Write today for our big, free, illustrated Seed Guide, circular, free samples. Address

Amesbury Mutual Seed Co., Dept. 21, Chicago, Ill.

BUIST'S SEEDS

PRODUCE QUICK & POSITIVE RESULTS

Buist's 1919 Garden Guide now ready for mailing—not merely a seed catalogue, but a practical book of interest to the experienced gardener and the beginner as well—tells how to make a kitchen garden supply your table with quality vegetables of the finest flavor. Right now it's important that every garden should be a *real producer*. Follow our instructions and reduce the "high cost of living."

Send for Your Copy Today—It's Free

If you have a garden you should have this book. It tells you what to plant and how to cultivate and is free on request. Write for it NOW.

Free Flower Seeds with Orders of 50c and Over

ROBERT BUIST COMPANY

15 S. Front St.
PHILADELPHIA, PA.



CLOVER

\$2
To \$3. Per Bu.
Less Than
Others Ask

BUCKHORN FREE GUARANTEED SATISFACTORY
Biggest values in clover ever offered. Don't fail to write us for samples. We can save you many dollars on Clover Seeds. Don't pay two profits. Buy from World's Largest Mail Order Seed House at Bargain Prices. Have new, reseamed Alfalfa, \$8.00 bu.; Sweet Clover, \$4.95 bu.; Timothy, \$4.50 bu.; Aisike and Timothy, \$4.50 bu. Other seeds in proportion. No risk buying from us. Your money back if you were not satisfied. We are a short. Write before advance. Send for free samples and big 116-page catalog.

A. J. BERRY SEED CO., CLARINDA, IOWA
Box 846

GRASS SEED

FREE SAMPLES

Wonderful Value
Wholesale Prices
Profits Divided
with customers. Don't fail to investigate these bargains. Received Tested Timothy \$4.75 bu., Alfalfa \$3.50, Aisike Clover and Timothy, \$4.50. Sweet Clover and other Grass and Field Seeds at proportionately low prices.

All sold direct to the Farmer. Government Test under an absolute MONEY BACK GUARANTEE. We are specialists in grass and field seeds. Located so as to save you money and give quick service. Send today for our big profit-sharing, money-saving Seed Guide which explains all, free. Buy now and save money. Write.

American Mutual Seed Co. Dept. 611 Chicago, Ill.

ALFALFA

Full information how to grow alfalfa, how to harvest and care for it, and how this most profitable crop; together with sample of our extra choice seed, 180-page illustrated catalog and special red ink price list free if you mention this paper.

IOWA SEED COMPANY
Des Moines, Iowa

IOWA SHIELD BRAND SEEDS

FREE BIG CATALOG OF LIVE SEEDS

and Plants and Pkt. Giant Pansy Sent FREE. Best New Seeds sure to grow, at low prices. Send for our Wholesale List.

ALNER BROS. NO. 15 Bldg. Rockford, Ill.

CONDON'S CRYSTAL WHITE GLOBE ONION

The Big Money Making Crop. \$1200.00 per acre is what our customers Mrs. Dorothy, Dorothy, and others say. To help you do as well and to insure success, we will send you 250 seed of this most perfect White Onion and Farm Guide.

Send Postpaid Today
CONDON BROS. SEEDSMEN
Rock River Valley Seed Farm
BOX 23 ROCKFORD, ILLINOIS

FREE FOR TESTING!

Just by a one-year apple tree and once, we will send you tree, one of the famous "Delicious" Apple Trees. Send for mailing envelope or not postage. Catalog free. ARKANSAS NURSERY CO., Dept. 47, Fayetteville, Arkansas.

and there is no more danger of frost. Sweet corn, melons, cucumbers, squash, lima beans and okra should be planted now, and tomatoes, peppers, sweet potatoes and eggplants should be transplanted from the hotbed. By following a schedule of this kind from a plan arranged before hand, the work is made simple yet effective. The usual tendency is to plant the tender crops too early. The space occupied by the early crops can be used for some of the later plantings of favorite kinds such as corn, beans, radish, etc. The garden should also be planned and handled so as to permit planting some vegetables during July and August for the fall garden.

Make Plans Early

It is well to get the plans made early, so that the seed order can be gotten off to a reputable seedsman as quickly as possible. Remember that the seedsman are rushed with orders at this season, so the early order is most likely to be filled satisfactorily. The amount of seed for each crop should be carefully estimated, as seeds are comparatively expensive now. Many gardeners were foresighted enough to save their own seed of some kinds of vegetables last summer, and they are indeed fortunate. Some gardeners bought more seed than they needed last year, and had a considerable amount left over after the planting season was done. Wherever such leftover seeds exist, they should be carefully taken care of, as they are generally good for this year's planting. Although it is usually advised to get fresh seeds each year, this is not at all necessary with many garden vegetables, which retain vitality for several years, if stored under fairly good conditions. The following list shows the number of years which seed of some vegetables will retain their vitality:

Beans, 3; beet, 6; cabbage, 5; carrots, 5; celery, 8; cucumber, 10; eggplant, 6; lettuce, 5; melons (all kinds), 5; okra, 5; parsley, 3; pea, 3; pepper, 4; pumpkin, 4; radish, 5; spinach, 5; squash, 6; tomato, 4; turnip, 5.

Seed of other vegetables not mentioned here are short-lived, and should never be carried over more than two years. Since seedsman often carry their seeds stock over one or two seasons, it may not always be safe to count on the full life of seeds as mentioned above. Then, too, the older seeds may be somewhat weaker, therefore should be sowed thicker and more carefully than fresh seeds. In some cases, cucumber for example, older seed are thought even better than new stock.

Varieties for the Home Garden

The seedsman's catalogs puzzle many gardeners by the numerous varieties offered under each kind of vegetable. There is not very much in a mere name, and still less can one depend on the glowing descriptions and pretty pictures. The home gardener wants a different variety generally, from that which the commercial grower in the same section would use, for high quality is the main object with the home gardener. Then, too, the home gardener wants a continuous supply instead of a heavy crop lasting a few days only. Shipping quality and fancy appearance mean little to the home gardener while keeping quality may be very important.

The following varieties are recommended for garden planting, although the gardener who has grown certain varieties would do well to retain them, if they have proved satisfactory.

Rhubarb, Victoria; parsley, Dwarf Perfection; onions, Yellow Globe—sets for early, Southport Red Globe seed for late crop of dry onions for winter storage; spinach, Savoy; turnip, Purple-top White Milan for both spring and fall plantings; lettuce, Grand Rapids, of the leaf type for early, of the heading type, May King; peas, Gradus for early, Potlatch for late; Irish potato, Irish Cobbler for early, Rural New Yorker for late and winter use; parsnip, Hollow Crown; beets, Detroit Dark Red for early and Edmand's Blood Turnip for late and storage purposes; carrots, Half-long Danvers; cabbage, Copenhagen Market for early, and Savoy, Rock Red, or Danish Round—head for late. Beans, Stringless Greenpod for early, Refugee Wax for second early, Country Gentlemen for main crop and canning, and Stowell's Evergreen for late; tomatoes, Earliana for first crop, Bonny Best and Greater Baltimore for main crop and canning; sweet peppers, Ruby Giant; lima beans, Burpee Bush Lima, and Sieva of the pole type; cucumbers, Long Green for slicing and pickles; muskmelons, Rocky

BEEMAN

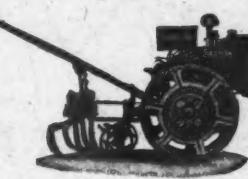
GARDEN TRACTOR

The One-Horse Tractor

It Motorizes
the Fruit
Farm and
Nursery

\$285

f. o. b.
Factory



It Plows
It Harrows
It Cultivates
It Mows
It's a Mechanical Horse



and it's a portable 4 h. p.
stationary engine

Replaces The Horse Solves The Help Problem

The Beeman completely and efficiently motorizes the fruit farm. It does any work ordinarily done with one horse or by hand. Does away entirely with the need of horses and the expense of keeping them.

It saves labor and never gets tired. Cultivates all sized shrubs, working close to the smallest ones without injuring them.

"Equal to a Team of Horses"

"The Beeman does fine work. I plow, harrow, and cultivate my five-acre orange grove with same and can do much better work than I can do with a team. I can get over nearly as much ground as I can with a team and do as good and even better work as I can get closer to the trees without breaking off the limbs. It costs me about sixty cents for ten hours' to run the tractor, where it would cost me seven and eight dollars for eight hours work if I hired a team and man to do the work." W. D. LIVINGSTON, Fullerton, California.

Write us for free booklet of information upon the Beeman and name of nearest dealer.

Beeman Garden Tractor Company
341 Sixth Avenue South
MINNEAPOLIS, MINN.



Sent FREE

Isbell's Catalog

Get this guide for growing a Victory Crop. Shows you how to get the best seeds that money can buy at money saving prices. It's written by experts and takes the guesswork out of planting. America needs all the food you can grow, and will pay high prices. Good seed is of first importance.

Isbell's Seeds
As They Grow Their Name Grows
For Garden For Farm

40 years' experience backs Isbell's Seeds. Ceaseless experiments, careful selection and testing has produced the most hardy, big yielding varieties. Only clean, pure, full life, true to name seed ever reaches an Isbell customer.

Every Ounce Is Guaranteed
Your money back if your own tests do not prove satisfactory. More than 250,000 farmers and gardeners use Isbell's seeds. You will too if you investigate. Write us today. Catalog FREE.

Free Samples
For your own tests we will send you samples of any Isbell's Farm Seeds—Clover, Alfalfa, Oats, Barley, Timothy. It gives you an opportunity to test Isbell quality and we'll guarantee the seeds you buy will be just as good as sample. Tell us when you write which seeds you want.

S. M. Isbell & Co.
1151 Mechanic St.
Jackson, Mich.

EVERYTHING for the GARDEN

is the title of our 1919 catalogue—the most beautiful and complete horticultural publication of the year—really a book of 184 pages, 8 colored plates and over 1000 photo-engravings, showing actual results without exaggeration. It is a mine of information of everything in Gardening, either for pleasure or profit, and embodies the result of over seventy-two years of practical experience. To give this catalogue the largest possible distribution we make the following unusual offer:

Every Empty Envelope Counts As Cash

To every one who will state where this advertisement was seen and who encloses 10 cents we will mail the catalogue.

And Also Send Free Of Charge

Our Famous "HENDERSON" COLLECTION OF SEEDS containing one pack each of Ponderosa Tomato, Big Boston Lettuce, White Tipped Scarlet Radish, Henderston's Invincible Asters, Henderson's Brilliant Mixture Peppers, and Giant Waved Spencer Sweet Peas, in a coupon envelope, which when encashed and returned will be accepted as a 25-cent cash payment on any order amounting to \$1.00 and upward.

PETER HENDERSON & CO. CORTLAND, N.Y.
NEW YORK CITY

MONTH
WOMEN5, who have
e wanted, from
ay from \$75
romotion; no ex-
ip and mail this
Box B-202.
aying \$75 to

ertising

PARTNER IN
earing orchard.RAYERS AND
fits \$2.50 each.
suler Company.ARRIED MAN
year-old Winesup
C. W. SaundersRY AND FUR-
duce guaranteed
tigler Company.ALE, STRONG
ands per week at
honesty Hatchery.LALFA-CLOW-
ns. \$35.00. San-
al Bank, Boulde-
Colorado.CE POST AND
en any wine, my
aves the profits
o Post Co., War-ANTS
TS FOR YOU
superior quality.
ake Shore NurseyCHARD
ERMARLE PIP-
ect condition, 50
st at a bargain.ERGREENS
EVERGREENS
1 lb.; Belladonna
Book and wa-
Haven, Conn.T PEACE JOBS
\$900 to \$1,500
ns. List positions
Franklin InstituteERLAND RASP-
r 1,000. Cumber-
\$15.00 per 1,000
ring Strawberries
Wm. Mandel, NewRICHARD MAN-
rowing apples and
Oregon. Collec-
of business that
handle any size
dams, and othersOLD WEATHER-
ers. 34 miles per
or half kilometers
motor. Very slow
profits to agents
trials. Air-Fri-
ayton, Ohio.DS—OUR OFFI-
overnment Land
every county in U
how secured from
y laws, lists, etc.
b PublishingRESENTATIVE
Wonderful "I
In this machine
greatest agricultur-
er in the world
objection to. For
cooling, labor
ring stress and
of these machine
horses; plowing
loads on the road
y farm machine
make of it show
demonstrations
this winter.

Send for our cat-

521 East 5th St.

The Orchard Home

A Section for Orchard Women and the Children Edited by Mary Lee Adams

"Laugh and Learn"

THIS appears to be the thought behind the novel motion picture advertising electric applicances for the home. A roaring comedy, with a real lesson involved which is skillfully concealed until the close when the audience is in a perfectly good humor and tingling with sympathy for the trials of the man of the piece.

The farce called "A Square Deal for His Wife," shows the young husband learning, as few men do, through bitter personal experience, the trials of the housewife under the ordinary conditions of the old-fashioned home without modern conveniences. Somehow it is irresistibly funny to see mere man struggling with the task that he is prone to think of as providing pleasant occupation and plenty of ease for his wife.

This laughter-provoking comedy wakes many a husband up with a start when the finale shows a home completely modernized and "happified" by the installation of electric appliances which make a pleasure of the old drudgery of cooking, washing, ironing, etc.

We wish that all fruit farmers could see this picture. Even if some of them are not yet in a position to undertake the initial expense of electrifying the home, it will rouse them to the fact that their wives do undoubtedly need the greatest measure of convenience which it is possible to provide for them, and shows how much happier the home may be with a bright, contented and rested woman at its head, rather than with one who is worn out, and too tired after the day's routine to enter into any kind of interesting companionship with the husband. The loss is almost as much his as hers when her life is a grind of heavy tasks which could so readily be lightened by the introduction of a few simple conveniences.

Mr. Wilson on Suffrage

WHEN President Wilson departed on his mission of peace, he recommended several things to the consideration of congress. A clever cartoon represents the senate and representatives as two rather forlorn old men sadly watching the departing vessel and holding between them a crosscut saw inscribed "Compliments of Mr. Wilson." Beside them looms a pile of heavy logs, and one of the most prominent is "Woman Suffrage."

That the president considered this among the few most important questions for the immediate future is significant, and should make us orchard women think seriously of fitting ourselves to exercise the ballot. Many of us are already well fitted to do so, and many have voted for years, but there are still some who take but a perfunctory interest in the national questions of the day. We should inform ourselves upon them, and know where our vote would make for righteousness.

Under the heading "Making Future Leaders" the United States Department of Agriculture remarks: "Democracy that is functioning to its fullest extent needs many citizens, both men and women, who are able to assume leadership. Two million boys and girls through their clubs under the direction of the Department of Agriculture and the state agricultural colleges, are learning to be future leaders in their communities."

How Schools Can Help

IT HAS long been subject for wonder that in many communities the school, which should be the active mental center of the community, is devoted solely to the set course of study prepared for all alike, without reference to the particular needs of any given community.

It is a good sign that this is changing in certain progressive rural neighborhoods. The testing of seed corn last year, by the pupils in many Minnesota schools, was of great practical value. In fruit growing communities, fruit is naturally the main interest of the inhabitants, and schools could easily furnish some instruction along this line to the pupils.

Many school yards that are desolate and bare might be transformed in appearance by planting a few fruit trees, and rows of berry bushes. What is more ornamental than a grape arbor? To build one would be a delight to the boys. To cultivate the little plantings would interest every scholar. They could be divided into squads so that the labor required from each one would be small, and doing it in company with the others would lend an atmosphere of sociability that all children enjoy.

The proceeds from this experimental fruitery might be applied in various ways for the benefit of the whole school. If the teacher

took the pains to get in touch with the parents it would be found that they appreciated the experiment if only from the view point that it would tend to give their boys and girls an interest in raising fruit and so keeping them contented at home.

The leading men of the community would very likely respond to an appeal that a special prize or prizes should be offered to rival young orchardists in the school grounds. There is nothing more useful than good tempered rivalry for making interest more keen and stimulating effort. Excellent books on all departments of fruit raising are common. And with these and fruit magazines it is very simple to be guided aright in good fruit practices. Youth is experimental, and it would be easier to introduce certain improvements through the school orchard than in the orchards of the regular growers. Thus the small, school fruit-plot may be the means of accomplishing much good, through training and interesting the young people in the work of the community, and through introducing improved orchard practices.

Saleswomen and Home Making

IT HAS often seemed to us hard that the girls who enter stores at an early age should have so little opportunity to fit themselves for running their own homes. Hutchinson, Kas., has evidently appreciated this lack in the life of the young saleswoman, and the home demonstration agent there is holding evening classes in which they work out such problems as the study of nutrition, food preparation and sanitation. Many Kansas homes of the future will profit by the sensible step taken by these girls, and their example will almost surely be followed by other civic centers.

Open-Air Markets

MASSACHUSETTS has 60 open-air public markets. These aid in disposing of an immense amount of perishable foodstuffs which might otherwise go to waste. In two hours and a half, women with market baskets carried away ten tons of farm produce at a Massachusetts market established by a county farm bureau, pur- chasing \$1,500 worth of food. Multi- ply by 60 and you get the amazing result of 600 tons of food disposed of by this means in a single day in a single state.



Utility

SOME people use O-Cedar Polish on floors and for treating polish mops.

Others use it on linoleum and oil cloth.

Most people, however, use O-Cedar for cleaning, dusting, polishing, brightening and beautifying furniture and woodwork.

In all these uses, O-Cedar Polish meets the most exacting requirements and produces gratifying results.

But O-Cedar has more and varied uses: try it on leather upholstery or your auto top; on lacquered or enameled metal, on willow ware, on rattan or reed furniture.

O-Cedar Polish is the utility polish. Wherever a clean, bright lustre is desired on painted, varnished, finished or stained surfaces use O-Cedar.

O-Cedar Polish

25c to \$3.00 Sizes At All Dealers Everywhere

CHANNEL CHEMICAL COMPANY

Chicago

Toronto

London

Buy a Home in Albemarle

and live among the most delightful people in the world, in a section that is rich in the historical lore of the country. You will make money and friends, live longer and happier, and give your children a richer heritage in future happiness.

WRITE FOR A FREE BOOKLET

Charlottesville Chamber of Commerce, Charlottesville, Va.



BEAUTIFYING THE HOME & GROUNDS



By Mary Lee Adams.

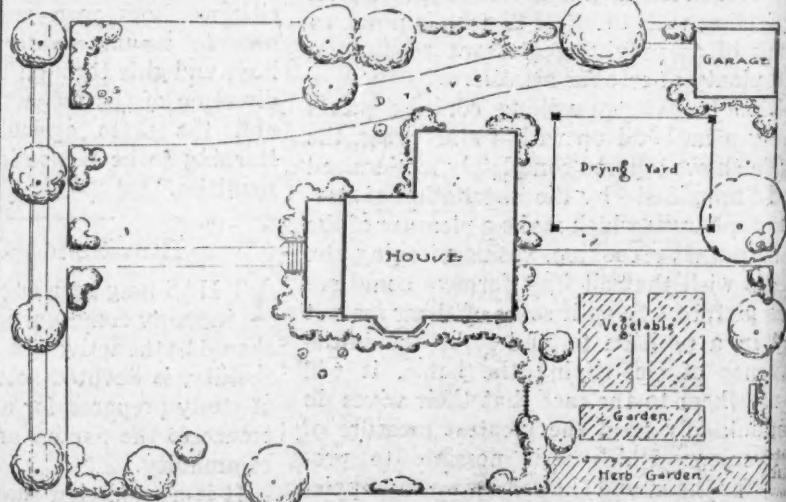
Make your grounds beautiful so that you will take pride and pleasure in them and your children will learn to love and appreciate their own home. Ask us any questions as to your planting problems. If you wish us to furnish you with a specially designed landscape plan for your home, send us a rough sketch of your house and grounds, together with statement of the sum you are willing to spend in trees, shrubs or flowers. This service is free to subscribers. Address "Home Beautifying" Department, American Fruit Grower, Chicago, Ill.

OME weeks ago, while window-shopping during a snowstorm in a big city, I was startled, as I skidded along the slippery sidewalk, to see lovely summery costumes, sheer white skirts, flower hats, parasols, in the handsomest displays. Spring had come—in the shop window. Had I been Rip Van Winkling the whole time between Christmas and Easter? My whirling brain was steadied by a sign that read: "For those who are going to the Summer-land of Florida or California."

I walked on, shivering but reassured, for I was not going to the Summer-land, and need not think of donning those marrow-freezing excuses for clothing. The mere sight of them pained the semi-frozen body which houses my warm heart. But somehow the filmy things roused me to the fact that spring is indeed on the way though

well as something to which you would call attention. A glimpse of blue distance, a green, rolling pasture, a sweet meadow with a stream running through, should on no consideration be shut out from view. These are things for you and your friends to enjoy. It is easier to open a vista upon pleasant objects than to hide the objectionable ones. Start with the more difficult.

The easiest way to screen any ugly feature is to hide it with vines, either climbing directly over it, or trained on a trellis placed before it. But vines are not always so satisfactory for permanence as sturdier growths. Nothing is so good for this purpose as evergreens, which hold their leaves at all seasons and never unmask the unsightly object. Quicker growing trees, however, have such obvious advantages, that it is sometimes best to choose them



An Attractive Landscape Design for a Country Home

veiled in icy fogs, and that it is already time, for those who wish to do their ornamental planting early, to start on their plans.

Have a Definite Picture

It is important that plans shall be made either on paper, or very accurately in the mind, before planting begins, otherwise there are going to be regrets. When the shrubs are at the door, waiting impatiently to dig themselves in, is not the time for calm reflection on where to place them.

We were caught that way one spring, and such a scampering and scurrying as there was to get the roots covered and settled before the sap should start. Worse than that. The shrubs all grew. Today they are vigorous and beautiful, and would be an unalloyed pleasure if each one were in its right place.

But we have been too vague in our mental picture of where they should stand, and a good many of them would be transplanted this spring but for fear of injuring them. It's hard to find courage to take the risk of hurting a beautiful plant, but the risk is generally worth taking if you have facilities for transplanting and know just where the plant in question should go.

Hide the Ugly Things

If yours is like most other rural homes, there is something you wish to hide, as

for early effect and to plant the evergreens to come in later. For a quick screen Silver Maple, Lombardy, Poplar or Carolina Poplar are effective. Cutleaf Weeping Birch has beautiful and graceful growth and white bark which makes it very attractive when planted in groups for a screen. Russian Olive is another good one.

What will be a wise selection for the screen will depend upon the height of the object to be hidden, and you should also consider how the planting as a whole will fit into its surroundings.

Be Natural

Avoid exotics. They are in doubtful taste at all times and are altogether out of place in such simple designs as we have in mind for the orchard home. Choose something that will be suited to your climate and location. A "specimen" tree or shrub may be very handsome in itself, but if it is not in harmony with its surroundings it strikes a false note and the whole planting is spoiled.

Often it seems a shame to sacrifice individual beauty to the general effect, but you can easily understand why this should be advisable. You may see it exemplified in every art. Which do you think more admirable, a success of melodious words without connected thought, or a perfect poem which include even harsh phrases.

provided they are needed to produce the desired effect? A single stroke of intrinsically exquisite color might well ruin a fine painting which boasts no such lovely hue, but which is yet complete and satisfying because every tone accords with the rest.

Tie House and Site Together

After you have thought out how best and quickest to hide ugly objects and outlooks, turn your attention to the house itself. Never mind how old and mellow the building may be, it will have the unfinished look that marks the unpleasantly new house, unless you avoid a bare foundation. Our homes, like ourselves, lose all their charm and individuality when they seem out of their element. A house that stands bare and stark with the foundation showing all round right down to the ground, looks as if you might just as well pick it up and set it down anywhere. It does not belong to its site. The easiest, and indeed the only way to "tie the house to the land," is by a softening planting around it.

This planting requires care and thought. Unless the foundation be particularly objectionable, there is no reason for concealing it entirely. Houses do not grow on bushes, and it is a mistake to let them appear as if borne upon a mass of shrubs. Break the line of these at intervals and let the foundation peep through the groups of plants or the curtain of vines.

If your foundation material is suitable, a sense of great permanence and dignity is secured by the Boston Ivy, which clings so thinly to the wall that it does not interfere with any growth in front of it.

Make your choice among shrubs that will not grow so high as to obstruct the windows later on. If there should be a particularly high window in the wall, a slender tree or tall shrub, or a trellis for vines, may be placed directly under it. But near low windows avoid such large shrubs as lilac, snowball, syringa, dogwood, etc. These, while lovely in themselves, will in time obstruct your outlook and make the house dark and gloomy. Tall shrubs should be planted either at the corners or in angles, or at some distance from the dwelling.

Shrubs and Flowers

We think with joy of nodding hollyhocks, tall lilies or roses bobbing in at the open windows in summer. What could be more delightful? But fuller satisfaction can be had the year round from a foundation planting of shrubs without flowers, than of flowers without shrubs.

If you wish to intersperse flowers with the shrubs, you may find a group of tall blooms pleasing, or you may scatter all the bulbs you wish among and between the clumps of shrubs.

Bulbs can be naturalized in grass, and when this is done in an informal manner through the grassy spaces at the edge of a wood, nothing less than enchantment results. Many darling flowers may be grown in the grass. Hyacinths, daffodils, jonquils, crocus, cowslip, violets, buttercups, these have such dear associations, that just to read the list of them makes the eyes misty with longing.

Whatever you place nearest your home, remember that some white blossomed shrubs will accord with any other color and be as striking as the most brilliant yellows, blues or reds. White "carries" to a great distance, far beyond blue for instance, and among the many shrubs desirable for foundation planting we must lay some stress upon the Spirea Van Houttei, with its foundation of snowy bloom. This is so good that almost any planting would seem incomplete without it.

As hinted in our last article, with a

thought for dreary winter days, the Japanese barberry will give you brilliant berries when all blooms are gone, and it is innocent of the rust which brings the common barberry into disfavor. Many other bright-berried shrubs, blue and white as well as red, can be bought or found in your neighborhood. If you wish sturdy flowers near the wall of the house, peonies furnish strong growth, fine green and unexcelled beauty of bloom, and the hardy texture of the leaves makes them seem not out of place in company with the shrubs. Being of low growth the peonies can be planted in groups in front of the shrubs, particularly where bays are formed in the shrub plantings.

Perhaps a few shrubs are all that you can buy this year. Study the spot that seems to call for their form and color, and place these few to the best advantage, keeping in mind that the shrubs will (if given half a chance) grow much larger, and that you may wish to add to their numbers in future years.

Trees for Beauty and Shade

Before getting away from the house ask yourself whether you are well provided with trees to shelter and frame it. The first thing you should decide is where you will plant trees if you have none, or not enough. Think of your house as a picture fitting into a frame. Set your trees to advantage on either side or to the rear. They will reward you richly before very many years.

You have a wide choice of varieties. Spreading oaks, graceful elms, pointed hemlocks, drooping birches—all fine and beautiful, but perhaps some of them are not suited to your particular purpose.

As soon as the trees begin to assume shape and size you will be surprised to see how they set off the house. Used as a frame for lawn and dwelling is the accepted ideal in placing trees. As a rule it is much the best. But every rule has its exceptions, and I can think now of an unpretentious Virginia home, set too near the road. Its first need is for privacy. Trees make a leafy screen between it and the highway, and underneath them some adaptable grass grows green and cool. To the right, as we look in from the road, a bit of natural woodland merges gently into the little grove in front of the house. To the left an open space of lawn relieves the eye, and leads it to a solid bed of brilliant flowers which seem perpetually dancing in the sunlight.

A further note of cheer is given by rambler roses set against the fence across the road. Would that more of our rural householders showed the fine love of flowers which induced the owner to request his opposite neighbor, whose house was withdrawn far out of sight, to allow him to set rose vines where they not only screen the objectionable fence, but furnish him with a refreshing prospect from his own front door as he glimpses the bloom through the trees. It would be a previous mistake to "open up" the front lawn of this oddly attractive little place and stare unshielded upon the passersby, or worse, be stared at by them. Often one has to take conditions as they are and do the best one can under the circumstances. If you are not sure what is best to do, write to our Home Beautifying Department for advice.

A Home in the Redwoods

Another most picturesque instance of trees directly in front of the house, comes to mind in memories of a summer home in the redwoods of California. This little brown bungalow hangs on the hillsides over a public driveway through the Sequoia woods. Its front foundation is unusually high, of wooden lattice. The back door opens flush with the ground, which rises somewhat abruptly behind it, leaving only a small space for a half-wild garden of unusual interest and charm. A wide porch, or piazza, running the entire length of the front, is effectually sheltered from the road beneath by a spreading madrone tree with broad, waxy, glistening leaves and twisted red-brown branches. Through its boughs come romantic glimpses of a deep and narrow redwood canyon, with rolling, grassy hills beyond. A little farther, and to the right of the madrone, a tall, splendid fir stands almost on the edge of the bank above the road. Beyond it the view of the countryside is unobstructed. These two trees veil the bungalow from below most alluringly, while the pleasure and comfort of the broad veranda, which is the outdoor living room, is made possible only by their presence.

Planting Problems Differ

These are not sited as models, but just to suggest that circumstances so alter cases that if we find our problems are not met by conventional rules, we need not fear yielding to nature and gaining in originality what we lose in correctness.

Most of our orchard homes are so placed that the open, unbroken lawn, with a setting of foliage and flowers, answers best, but there are steep orchards where the house clings to the slope and requires unusual planting treatment to make it harmonize with its surroundings.

For marking boundaries of the space we put under cultivation, a naturalistic border of trees and shrubs serves to tie the cultivated portion to the wild without any sharp transition being noticeable. Hedges are sometimes too formal for this, besides being slow of growth, and too obvious in intention. The care of them is also somewhat exacting. In their proper setting, however, much satisfaction to the eye may be derived from a good hedge.

The HOUSEKEEPERS EXCHANGE

by Edith Randolph

We will pay \$1.00 each for helpful suggestions which will save time, money or strength in all sorts of housework. None save original ideas can be accepted. Unaccepted manuscripts will not be returned unless an addressed, stamped envelope is enclosed. Address "Housekeepers' Exchange," American Fruit Grower, Chicago, Ill.

1. Sponging the shiny part of a black garment with vinegar, and of a blue one with strong bluing water, will remove the shine and intensify the color. Press under a cloth dampened in the same.—V. R. S., Denver.

2. Make use of a heated tile for a coffee-pot rest to keep the second cup hot.—M. L., Nebraska.

3. Carry baby's milk in a thermos bottle when traveling away from home for any length of time. Put several layers of waxed paper over the cork before inserting it.—C. V. P., Vermont.

4. The beaten white of one egg mixed into the contents of a one-pound can of ground coffee which is kept tightly covered, will make it ready at short notice for those who like coffee settled with egg.—D. L. L., New York.

5. To bring out the flavor of chocolate add a teaspoonful of good brandy.—D. E., Denver.

6. Clean furs by heating corn meal as hot as the hands can bear, stirring it constantly. Rub meal well into the fur and let stand half an hour or more. Brush and shake carefully until all meal is removed. This will not injure the lustre.—C. P., Minnesota.

7. Wash the joints and bearings of the

worn out sewing machine in gasoline to remove dirt and old oil, wipe off thoroughly and oil afresh. Run a few minutes and wipe off superfluous oil with an old flannel or chamois.—R. S., Missouri.

8. To keep cookies soft put them in a cloth-lined, tightly-covered stone jar.—M. L., Minnesota.

9. Try a pinch of salt in the mouth followed in a few minutes by a large drink of water to relieve and perhaps cure a sick headache.—R. R. S., Pennsylvania.

10. Hamburg steak is more delicious and economical when mixed with bread crumbs which have been soaked in either milk or water and seasoned with onion, parsley, salt or pepper.—M. M. B., Virginia.

11. It is surprising how much vaseline there is in a bottle when you think it is empty. Slightly heat the bottle until the vaseline, cold cream or salve runs to the bottom, then lay it on its side to cool where it will be near at hand, especially if the user is short-fingered.—M. B. H., Staten Island.

12. A time-saver when hanging clothes will be found in a grape basket with a wire hook fastened to the handle. This can be pushed along the line and the pins are always handy.—T. R. A., Iowa.

Afgco Cook Book

By Mary Brownlow

Add crackers and baking powder. Add walnuts. Add whites beaten stiff. Bake in two pans, moderate oven, spread layers with white icing.

Never-Fail Pie Crust

1½ cup flour 4 tablespoons ice 1 teaspoon salt water 8 tablespoons lard ¼ teaspoon baking powder

Mix dry ingredients, work in lard with fingers. Add as much of water as needed to make it hold together enough to roll. Roll thin. This makes enough for two pies.

Jelly Roll

3 eggs 1 cup flour and 1 cup sugar 1 teaspoon baking 1 teaspoon flavoring powder 4 tablespoons sweet milk

Beat yolks with dover beater, gradually adding sugar while beating. Add milk and flavoring. Fold in whites beaten to froth. Fold in flour and baking powder and beat thoroughly. Bake 12 to 15 minutes in moderate oven. Remove from pan to a flat surface covered with cheesecloth or old muslin. Spread with jelly and roll while hot.

Chicken Pudding

2½ cups diced cooked 2 cups milk chicken 1 teaspoon salt 3 eggs 1-6 teaspoon pepper 2 cups canned or green corn

Beat eggs well, add other ingredients. Pour into a well-buttered baking dish or casserole. Set in pan of hot water. Bake in moderate oven until set.

Ham and Potato Croquettes

2 cups minced cooked 4 eggs ham Sifted bread crumbs 4 cups mashed potatoes

Heat ham and egg yolks together, stirring constantly. When cold, shape into balls or cylinders. Cover with potatoes. Roll in crumbs, then slightly beaten whites to which ¼ cup of water has been added, then in crumbs and fry in deep fat. It is well to let croquettes stand a couple of hours after shaping them before frying as they are less liable to fall apart in the frying.

Brown Bread
2 cups Graham flour 1 cup corn syrup
2 eggs beaten light 2 teaspoons soda
1 teaspoon salt 1 teaspoon hot water
2 cups sweet milk

Mix together thoroughly and steam in a well-greased pudding pan two hours.

Cranberry Pudding

One-half cup molasses into which stir 2 teaspoons soda and enough hot water to fill cup, 1 large cup cranberries floured, 1½ cup flour. Beat well and steam two hours. Serve with hot butter or vanilla sauce.

Apple Sponge

1 pound sugar 1 box gelatine and 1 cup cold water
2 cups boiled water ½ cup cold water
6 large apples 1 lemon rind grated
Juice 2 lemons 2 egg whites (beaten stiff)

1. Make syrup of sugar and boiling water. 2. Cook apples, until tender, in sugar and press through sieve. 3. Add to soaked gelatine. 4. Add lemon rind and juice and stir until it begins to thicken. 5. Fold in beaten egg whites. 6. Mould and serve with vanilla sauce made with the egg yolks.

Sour Cream Cookies

1 cup lard and butter 1 cup sour cream
2 cups sugar 1 teaspoon soda
½ teaspoon salt Flour to stiffen
Cream shortening and sugar. Add other ingredients in order. Roll thick, cut, sprinkle with sugar. Bake, moderate oven.

Sausage

1 pound pork, ½ of 1 teaspoon sage
which must be fat 1 teaspoon black
2 teaspoon salt pepper
3 crackers rolled fine ½ cup milk

Mix well, and let stand one-half hour before using.

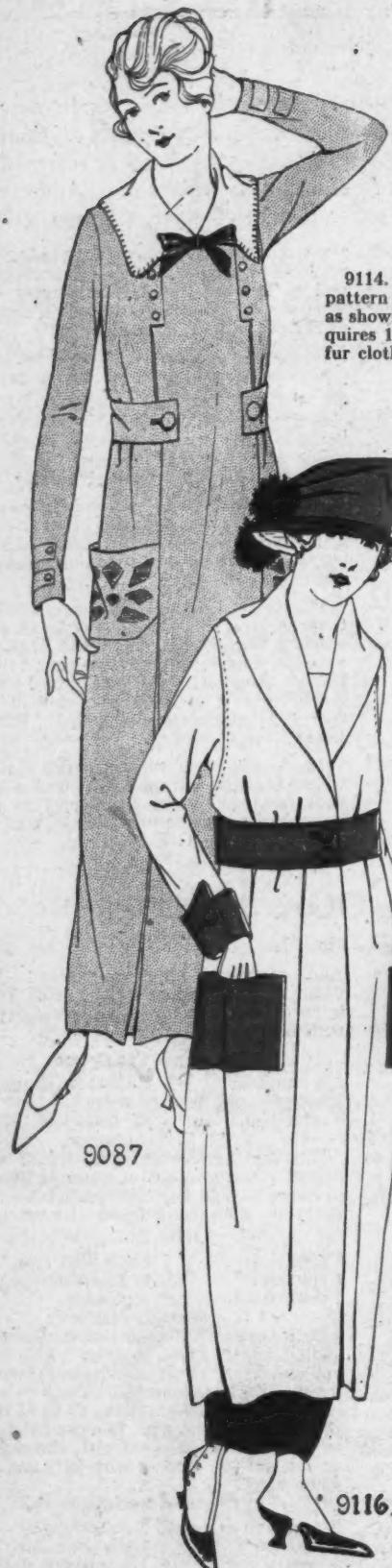
Graham Cracker Cake

1 cup sugar ½ cup butter
3 eggs ½ cup milk
½ cup chopped walnuts 21 crumbled and sifted Graham crackers
1½ teaspoons baking powder

Cream butter. Add sugar gradually. Add yolks thoroughly beaten and milk.

Reflections of the Season's Latest Modes

Afgo Patterns



9087



9116

How to Order Patterns
Write your name and address plainly on any piece of paper, give number and size of each pattern you want; enclose 12 cents for each number, money order, stamps or coin (wrap coin carefully) and address your order to American Fruit Grower, 329 Plymouth Court, Chicago, Ill. Safe delivery of all patterns is guaranteed.

9114. MUFF AND NECKPIECE—The pattern contains two styles for the neck piece as shown. One size. The set illustrated requires 1½ yards 30-inch, or ¾ yard 50-inch fur cloth, with 1 yard 36-inch material.



9114

9086
9085

9102



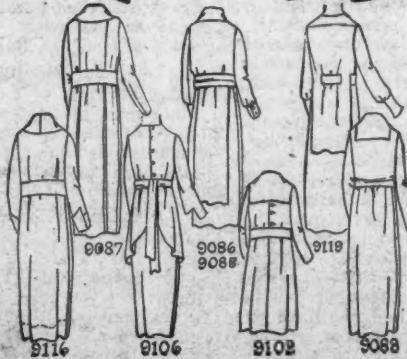
9119

9087. LADIES' AND MISSES' ONE-PIECE DRESS—With inverted plaits at front and back. Sizes, 16, 18 years, and 36 to 44 bust. The 36-inch size requires 5 yards 36-inch material.

9116. LADIES' AND MISSES' COAT—Collar may be worn high or low. Sizes, 16, 18 years, and 36 to 46 bust. The 36-inch size in 50-inch length requires 5½ yards 36-inch, or 4½ yards 54-inch material.

9106. LADIES' AND MISSES' DRESS—Closing at back, high or low round neck. Two-piece skirt in raised waistline. Sizes, 16, 18 years, and 36 to 42 bust. The 36-inch size requires 4½ yards 36-inch material.

9102. GIRLS' DRESS—Sizes, 6 to 14 years. The 8-year size requires 2½ yards 36-inch material, with ¾ yard 36-inch contrasting.



9088. LADIES' AND MISSES' DRESS—With inset vest and flare or dart-fitted sleeves. The two-piece skirt is gathered to an underwaist. Separate overblouse. Sizes, 16, 18 years, and 36 to 46 bust. The 36-inch size requires 3½ yards 36-inch, with ¾ yard 36-inch contrasting.

9119. LADIES' DRESS—Separate overblouse worn over kimono waist. The 36-inch size requires 5½ yards 36-inch material. Sizes, 34 to 44 bust.

9086. LADIES' AND MISSES' WAIST—Sizes, 34 to 44 bust. The 36-inch size requires 1½ yards 36-inch, or 1½ yards 40-inch material, with 1¼ yards 15-inch.

9085. LADIES' AND MISSES' TWO-PIECE SKIRT—Has three loose panels. Sizes, 16, 18 years, and 26 to 32 waist. The 26-inch size requires 3½ yards 36-inch material without up-and-down.

W
let us
day i
hurri
off, un
today
is alwa
A g
that t
kind o
care o
burned
other t
time w
coals,
or else
is one
of tha
frying
With
lighted
the doo
time t
the sto
true o
door u
and let
of the
ageme
and t
boiled
cloudy,
boiled t

The
can no
mean v
whites
a hot g
ture th
whites
gravy,
throw i
any am
factory
but fo
spoons
milk, w
duce a g
then ad
gravy is
from t
sightly,
the sec
gravy o
To gu
astrous.
flat, pa
that it i
ings in
using the
Don't
utensils,
venient
cumulate
robbing
work.

To
Veget
dinner o
lunch. I
fire in b
as long a
a momen
delicious
right. T
no other.
cold wat
enough b
cover the
and the
peas, cov
uncover
drain. A
perhaps
over the
such as
soggy a
the fire i
Rice shou
of cold w
stand ove
dry.



Some Kitchen Mistakes

WITH resolutions still fresh in our minds, as well as ambitions to follow up newer ideas this year, let us look into the mistakes we make every day in the kitchen. Most women work hurriedly and without system, they put off until tomorrow what should be done today, and today's work done tomorrow is always more troublesome.

A great handicap to many women is that they don't learn how to handle their kind of stove. If yours is a coal range take care of it in the morning before it has burned so low that you must wait for another coal fire to "come up," just at the time when it is needed, throw wood on the coals, making extra trouble and expense, or else change the plans of the meal. This is one of the causes of the too frequent use of that deadly kitchen utensil called the frying pan.

With a gas stove, often the oven is not lighted long enough before being used, and the door of the oven is kept closed from the time the gas is lighted; thus by sweating the stove shortens its life. This is also true of oil stoves. In both kinds open the door until the iron is heated, then close it and let the oven heat. It is the knowledge of the drafts of the stove and their management that produces the tender stew and the perfectly clear soup. Soups boiled hard or below temperature are cloudy, greasy and unpalatable—meats boiled too hard are also spoiled.

To Make Good Gravy

The importance of accuracy in cooking can not be overestimated. Directions mean what they say. For instance the whites of two well-beaten eggs stirred into a hot syrup produces a far different mixture than a hot syrup poured into the whites of two well-beaten eggs. In making gravy, to lift the roast from the pan, throw in a little flour, mix it and pour in any amount of water brings a far less satisfactory result than to pour off all the fat but four tablespoonfuls, add four tablespoons of flour, mix and add a pint of milk, water or stock. The first may produce a gravy too thin, or often it is pasty; then add more water and by the time the gravy is right the fat will have separated from the flour and the gravy is an unsightly, greasy, unwholesome mass while the second brings forth a smooth, palatable gravy of the proper consistency.

To guess at seasonings is even more disastrous. It means the soup will be either flat, palatable or so salty and peppery that it is unfit to be eaten. Keep seasonings in small bowls, measure accurately, using the long way of the spoon in dividing.

Don't overload the kitchen with useless utensils, but have what you need in convenient places. Don't allow things to accumulate on the table while working, thus robbing yourself of needed space to do good work.

To Cook Vegetables Right

Vegetables should be a big factor in the dinner of every home as well as in the lunch. Let us see that they go over the fire in boiling salted water and are boiled as long as the recipe stipulates, at least not a moment less. Green peas, the most delicious of vegetables, are seldom cooked right. Try this way once and you will use no other. Shell the peas, throw them into cold water for an hour, drain, add just enough boiling water to be seen, not to cover the peas, add a teaspoonful of salt and the same of sugar to each quart of peas, cover and bring to the boiling point, uncover and cook twenty minutes and drain. Add a tablespoonful of butter and perhaps a little pepper, shake a minute over the fire and serve. Starchy vegetables such as potatoes and rice are too often soggy and moist because of being put over the fire in cold water or cooked too long. Rice should be drained when cooked, a cup of cold water dashed over and allowed to stand over the kettle or at the oven door to dry.

Acquaint yourself with the exact time required to cook various articles of food at a given temperature. This does away with guessing and reduces the chances of failure. In baking be exact—use an oven indicator or thermometer, and have a true knowledge of the temperature of the oven. Do away with this opening of the oven door, as so many inexperienced cooks do, which merely means extra work, time and fuel with poorer results, for each time the door is opened the oven is cooled. Good juicy beef is often spoiled in the baking. The correct way is to put the beef in a dry pan, fat side up and resting on the bones. Run it into a hot oven to sear it quickly on the outside thus retaining the juices which are rich in albumen and flavoring. Keep the oven hot for twenty minutes to thirty minutes, cool it to about 240° and cook the roast fifteen minutes to each pound it contains. Baste occasionally with fat in the pan, and when it is half done dust lightly with salt. Boiled meats are so often spoiled. The right way is to drop the meat into a kettle of boiling water. Let it boil rapidly for twenty minutes, then push it to the back of the stove where it will boil more slowly, allowing twenty minutes to the pound of meat. This beef will be juicy and tender.

Failures often result from inaccurate interchanging of materials, for instance, using sweet milk for sour or not substituting baking powder for soda. Granulated sugar and powdered sugar are not interchangeable in many instances—granulated sugar makes poor icing or meringue, while powdered sugar, especially the three X, makes heavy cake. Bread flour, unless the quantity is reduced two tablespoonfuls to a cup, cannot be successfully substituted in making fine cakes and pastries. Southern corn meal cannot be substituted for the coarse, yellow, northern meal in like quantity. Let us not cook dishes so long before they are needed that we must allow them to simmer; in flour mixtures they become pasty, in egg mixtures curdled. Another point to be emphasized is the making of the salad dressing at the table. It is an art which every member of the family should cultivate; it is time-saving to the housewife, and the palatability of a salad made from freshly made dressing poured over dry, crisp lettuce or other greens is very pleasing.

Let us improve, if possible, on that greatest of all defects, the lack of taste shown in seasoning. Seasoning does not mean the use of pepper and salt alone. Combine vegetables that improve another. Try a suspicion of garlic or onion with the lettuce and romaine; a dash of celery increases the flavor of cabbage; a slice of onion improves the stew. Try a suspicion of mace in the tomato soup, bay leaf and celery in potato soup, and to the last two add a bit of carrot for the beef tea. This will start a hundred different variations in seasonings. Let our better housekeeping this year along culinary lines so improve that better health, the result of tasty food and a satisfied appetite, will start.

THE DIFFERENCE

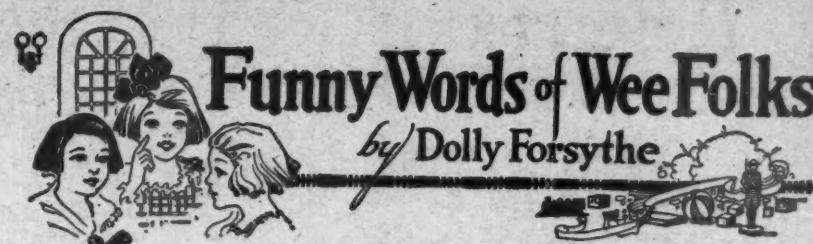
When we were together, heart of my heart,
on that unforgotten quest,
With your tender arm about me thrown and
your head upon my breast.

There came a grief that was bitter and deep
and straightly dwelt with me,
And I shunned it not, so sweet it was to
suffer and be with thee.

And now when no more against mine own
is beating thine eager heart,
When thine eyes are turned from the glance
of mine and our ways are far apart,

A dear and long-sought joy has come my
constant guest to be,
And I love it not, so bitter it is, unfelt, un-
shared, by thee.

—Exchange.



Funny Words of Wee Folks

by Dolly Forsythe

We will pay \$1.00 each for childish sayings accepted by us for publication. The story must never have appeared before in any magazine or paper. Unaccepted letters will not be returned unless an addressed, stamped envelope is inclosed. Address "Childish Sayings," American Fruit Grower, Chicago, Ill.

For several years it had been my custom to make a visit on Thanksgiving afternoon at the home of my most particular friend. This last Thanksgiving I missed, as the family was to attend the community singing at 4 p. m. A few days after little Katherine dropped in to see me and asked: "Why didn't you come to see us on Thanksgiving?"

"Well," I replied, "you were not at home in the afternoon."

She then asked, "Why didn't you come earlier? Why not come for dinner?"

"But," I jokingly replied, "you didn't ask me!"

"Well," she replied thoughtfully, "I think if you had come early and hung around they'd have asked you!" M. T.

I asked Clifford what he wanted for Christmas and he said, "A watch."

"A wrist watch?" I asked.

"No, not a wrist watch. I want one that goes across your vest, you know, a stomach watch." M. D. R.

Malcolm had been spending the afternoon with two little neighbor girls. When he returned home his father asked him if he had a good time. To this Malcolm replied, "No."

"Well, how's that?" asked his father.

"Well, the girls hit me."

"Did you hit back?"

"No. I hit first."

R. L.

One of the birthday presents of our neighbor's child was a bowl containing two goldfish. When I asked regarding them the other day, he said: "Oh, one of 'em's dead, but the other one is goin' yet." R. R.

Aunty had planned to be less busy than usual one day, for she had promised to take Lottie downtown to see Santa Claus. Lottie was impatiently waiting to start, but aunty kept on assuring her she hadn't much more to do and would soon be ready to go. At last the delay became unendurable and Lottie resentfully shouted: "It seems to me the littler you has to do, aunty, the longer it takes you to do it."

F. J.

Martha has decided ideas as to clothes. I was urging her to wear a dress she heartily disliked, using as an argument that good, kind Santa Claus had left it for her on the tree last Christmas. "Well," she answered, "I'll wear it, but if you see Santa Claus just tell him that if it's all the same to him I wish he'd let you pick out my clothes!"

B. R. M.

The first snow of the season, long delayed, came down in a soft blanket on Christmas Eve. Next morning I was congratulating little Joey on his many beautiful gifts. "Yes," said Joey earnestly, "and God sent a nice present too. He sent the beautiful snow."



Etiquette for All Events

by Raymond McAllister

It is sometimes very difficult for dwellers in rural communities to keep posted on the proper etiquette for various social occasions. Questions on etiquette will be discussed and answered in this column of the American Fruit Grower. If you wish a personal reply, an addressed, stamped envelope must be enclosed. Address, "Etiquette Department," American Fruit Grower, Chicago, Ill.

Remove or Retain Hat?

A girl friend and I lunched by invitation with one of our neighbors, and we were undecided as to whether we should remove our hats before going to the table. However, we finally decided to leave them in the room where we removed our wraps, but we noticed that two other girls who were there, and who live in the city near us, wore their hats throughout the meal. Do you think we were right in taking off our hats?—M. C. C., Tennessee.

Your question is a somewhat difficult one to answer as it would depend much upon circumstances as to which decision would be correct. In the particular instance you site, we assume that the luncheon was an informal affair and therefore not regulated by the more set etiquette of the cities. If the lunch is a formal affair among comparative strangers, the ladies should retain their hats, but in the country, where hostess and guests are apt to know each other better and to be on a more informal and friendly footing, I think it creates a more natural and easy atmosphere to sit down to table as if at home, without the hat. From what you have written me I would gather that you and your friend showed better taste than did the city girls. Al-

though confined by the customs of sex to unattractive headgear, I am sufficiently sympathetic to know I would be sadly tempted to retain my hat under any circumstances if I felt that it was peculiarly becoming.

How to Sign Name?

Is it correct for a woman to sign her correspondence with her married name, as for instance—Mrs. Ralph G. Duncan? What form should be used in writing to different correspondents?—P. T. A., Minnesota.

When writing to a relative or intimate friend who uses your Christian name, there is no objection to signing simply "Laura," or "Rose," provided you know there can be no doubt in the mind of your friend as to who Laura or Rose is. In general correspondence the proper form is Laura Lee Duncan, and if you wish the person to whom you are writing to know how to address their reply you may follow this signature by adding "Mrs. Ralph G. Duncan." It is quite intolerable to sign a letter to a social equal—even if personally unknown—as "Mrs.," with either your own or your husband's name following.

For Our Boys and Girls

DEAR FRUIT GROWER CHILDREN:

Starting with this issue you are to have a department of your very own. Isn't that fine? And isn't Mr. Adams good to give up this much of his valuable paper to the little folks?

Now, as this is your department, I want you to write me—every one of you, big and little—and tell me just what kind of stories you like. Do you like puzzles, animal stories, fairy stories or stories like the one we are giving you this month?

Next month you are going to have a surprise and I am sure you will like it.

Address all letters to Edith L. Ragsdale, AMERICAN FRUIT GROWER, Chicago, Ill.

PEGGY'S VALENTINE PARTY

The whole schoolroom was buzzing with excitement; Valentine Day was but a week off and up on Teacher's desk stood the loveliest box marked "Valentines."

"I'll get a lot," declared Ruth Moore. "I always do. Last year I got six."

"I got seven," retorted May Allman. "Some of mine came through the mail."

Peggy Biggs, the new girl, stood by, listening to the chatter of her schoolmates. Never, in her whole 10 years had she received single valentine, much less six or seven. How wonderful it must be, she thought, to have so many friends remember her one.

Peggy's desire to be remembered was of long duration. Just when the aspiration was born she could not say, but for the longest time she had secretly hoped that someone, she wasn't very particular who, would remember her, that when Teacher called out the names Peggy Biggs would be among the number.

May Allman turned to Peggy, who, being one of the little girls, was looked upon with scant tolerance by the 8th graders, and demanded: "How many did you get?" Peggy flushed and stammered: "I, I—didn't get any."

"Not a single, solitary one?" chorused the big girls.

Peggy shook her head. "Not one." Then, bravely, "But I am going to get a lot this year."

The ringing of the recess bell put a stop to the conversation which was beginning to take on a too personal tone to suit the new girl.

"Bet she don't," followed Peggy to her seat and kept her company the rest of the afternoon.

That evening Grandma brought out the most wonderful treasure, all pink roses, red hearts and blue forget-me-nots almost smothered in lace and bearing the tender legend:

"Roses red and violets blue,

Sugar's sweet and so are you," which Grandpa had sent her when they were young people a good while ago when Grandma's hair was as brown as Peggy's and curled as prettily.

Mother, too, had displayed an amazing creation of pink satin and ribbon, the fashion of another generation, which Daddy had sent her. It didn't say anything about roses or violets or sugar, but it was very lovely and extremely sweet smelling.

And, skipping over the sands of time and arriving at Aunt Nina's period, Peggy, with a gasp of delight, recalled the huge box of American Beauties Jack Stafford, Aunt Nina's beau, had sent her last Valentine Day.

Of the three she preferred Grandma's because it was so lacy and the words, all written in gold, sounded so sweet.

The store windows, too, were filled with beautiful tokens; almost, decided Peggy, as pretty as Grandma's. One in particular appealed to her. It was a marvel of the valentine maker's art in so much that it assumed at least two different shapes, a big red heart when closed and a really-truly fan when opened; and it cost all of 15 cents, too.

Day after day as Peggy passed to and fro on her way she would pause and feast her eyes upon the big red heart. "I do hope somebody will buy that one for me," she whispered the evening of the 13th as she crept up to bed, "I cannot imagine a valentine I'd rather have."

But alas for Peggy! The next afternoon (which happened to be Friday as well as St. Valentine's Day) when Teacher called out the names, and the scholars, conscious and smiling, went forward to receive their tokens, Peggy, alone and miserable, saw some of the girls carry away as many as the boasted six or seven, but though she listened with all her might, no name remotely suggesting Peggy Biggs was called.

"It's too bad," murmured Teacher. "Had I supposed she would be overlooked I'd have dropped in one myself. Poor little thing! How disappointed she looked!"

The tears, which Peggy had resolutely held in check during the ordeal, began to drip as she made her way down the stairs. So fast did they crowd from beneath her lids that all things became a blur and the next she knew she was lying in a little heap at the foot of the stairs, her ankle twisted beneath her and a generally dazed feeling in her head.

"A slightly sprained ankle," said the doctor when he examined it. "Keep off your foot for a day or two and it will be all right."

So Mother Biggs made Peggy comfortable on the big couch in the living room and, as mothers have a habit of doing, was shortly in possession of the story of the valentine box and the afternoon's disappointment.

Mrs. Biggs patted the little fat hand lying on the spread: "Mother's girl must not let such things trouble her," she said. "It was disappointing, I'll admit, but the day is not over. There is plenty of time for valentines yet. Wouldn't it be fine to get one at the post office—I should think that would be better than getting one at school."

"It would," replied Peggy, "only, you see, Mumsie, I was so sure that I would get one that I told the girls that, that, I'd get a lot this year! 'Course, I shouldn't have done it, but I was so sure. All the rest got some; some of the girls a lot, and, and, I guess they think nobody loves me!" Peggy's secret was out.

"But everybody does love you," cried a gay voice as Teacher entered the room. "I love you and so do all the others." She laid a bunch of Pussy-willows on the couch. "Amuse yourself with these while I speak to Mother."

Daddy Biggs came in with a great stamping of feet. "My, but this snow is soft," he cried, then: "Hello, Peg o' my Heart, what are you curled up there for?" Then, before she could reply he laid a package in her lap. "Express Agent asked me if Miss Margaret Biggs was a relation of mine. Said there was a package there for that name. After a bit I remembered my daughter's baptismal name was Margaret so I brought the box along. Why," as Peggy began laughing, "what is it?"

"A couple of valentines!" cried Peggy. "The funniest ever!" With trembling fingers she untied the string and removing the paper disclosed a tiny wire cage in which a pair of snow white bunnies sat, ears erect, big pink eyes blinking in the sudden strong light.

"They're just what I wanted," declared Peggy, as the doorbell rang. "Now, Daddy, I want you to make a pen—" Mother Biggs entered: "Here's another valentine, daughter," she said. "What did mother tell you?" Peggy squealed with delight. "Candy!" she cried. "Oh, my!"

Again the doorbell rang. "Wonder who's there?" hazarded Peggy. "Sounds like a lot of people—the noise they make—"

"Come in, come in," called Daddy

W. Barret Hankins Says— Double "Home Helps" in Double Nineteen

1919—"Double 19" is on. For the world and for individuals it has a double powered message. To nations it cries: "Double peace prosperity;" to the business man, it commands: "Double your effort;" to the social worker, it urges: "Double your achievements;" to the housewife, it exclaims: "Double your Home Helps."

Each month as you put your home on a firmer business basis, by equipping it with articles I have tested and approved for you, you find your household efficiency rising nearer the 100% mark. If the purchase of one efficiency device lightened your labor, the use of two proved doubly effective.

So in "Double 19." Each month there will be perhaps one article, at least, of those described, which will help double your worth-while accomplishments. Make up your mind to have it, to use it, to profit by its economy of your time and energy.

Doubling your "Home Helps," doubles household efficiency; increases household harmony; insures household happiness.

Women should double their progress in "Double Nineteen." Women should grasp every opportunity for dispelling drudgery and advancing along the road of domestic achievement.

that in raising home standards, lies the solution of many of our most puzzling economic problems. Men who once turned their attention to only the business aspect of the economic question, are now directing their brain power and energy to evoke "home helps" of every nature, realizing that all other enduring institutions depend upon and are strengthened by home force.



Test and Approval No. 125

With this device you can "make it too warm" for chills and cold, by just the "scratch of a match." The warmer illustrated here saves your energy, completes your comfort, eases pain.

No bricks to heat, no water to boil—no trouble to start the "heat" going.

Fuel brick is placed in drawer of warmer and ignited with a match—gives continuous heat for eight hours. Fireproof: Asbestos lined, wrapped in sanitary white flannel.

Today our best inventive skill is being utilized for enriching our homes with labor-saving aids to advancement. Today, those concerns which you approve as organizations rendering a high type of service, envisage household needs and visualize to you the merchandise which helps overcome tedious household toil.



Test and Approval No. 124

Test and Approval No. 124 is a clothes bar, with "arms" attached to a revolving head, each "arm" operating independently of the others. Placed near the ironing board, articles may be hung on nearest rod. Saves time, steps and energy, as each unused rod, by simply revolving head, swings around to you. Articles may be easily dried by hanging them over bar "arms" and standing bar near heat. Handy in the nursery too. Hang the kiddies' clothes on it at night. No scrambling to find little "wearables" in the morning. Simple and convenient to use. Closes up compactly, fits into a corner, out of the way.

In 1919 we will see marketed more devices than ever before, designed to increase household efficiency. It has been proved

Biggs, as a couple of heads peeked around the door facing, "no use in standing out in the hall."

The next minute Peggy, with the white rabbits in one arm and the candy in the other, saw the room fill up and overflow into the dining room as her schoolmates, a little strange and awkward, filed in. Teacher came to the rescue in a neat little speech in which she referred to Peggy's short residence in their midst and of the desire of the whole school to become better acquainted with the Bigges, Peggy especially. That they had had a little meeting after school and decided that St. Valentine's Day was a most auspicious time to begin friendships, "so, here we are," she concluded. Then she nodded to Mother Biggs, who smiled and disappeared, returning almost immediately with her wicker workbasket which she set in the middle of the library table. Teacher called the roll and as the pupils answered "present" as they walked over to the table and dropped something into the basket. When all had responded Teacher arose to say good-night.

"Hold on," cried Daddy Biggs, "it's early yet—what's the matter with having a real old-fashioned candy pull? I guess there's no restrictions on sorghum—and I've got a lot of it. Then, if any of you young people like it, there's a lot of pop corn drying up in the attic—and there apples in the cellar—"

A concerted whoop answered his protest.

From her throne on the couch Peggy laughed and chatted, the happiest little girl, despite the sprained ankle, in the whole county. She wasn't forgotten and the girls and boys who had seemed distant weren't distant at all.

When St. Valentine's Day was almost gone Teacher led her flock away; and, on Peggy, a very sleepy Peggy, knelt to say her prayers, she still held one of her treasures in her plump little hand. It was a big red heart but, if you opened it, it made a really-truly fan and across the forget-me-not sprinkled face two lines of gold letters spelled the couplet:

"Roses red and violets blue,
Sugar's sweet and so are you."



from 3 Barrels of Apple Cider to \$1813.00 Profit

FRUIT-FOG is now publicly acknowledged a big success. Records that are almost unbelievable are being produced in Fruit-Fogged orchards. This is because Fruit-Fog is thorough. It seeks out and kills the vicious *hidden* pests which do heavy damage and which *no coarse low-pressure can reach*. It makes your solution go much further.

Mr. Chas. Tanzenberger, of Jefferson Barracks, Mo., a typical example, got 3 barrels of cider from the crop of 130 unsprayed trees. The next year, due to thorough spraying, the same trees yielded a profit of \$1813.00. You want a big yield of fine fruit. You want crops that will bring the most money. Then investigate Fruit-Fog—the scientifically atomized super-spray produced by

HAYES FRUIT-FOG SPRAYERS

Fruit-Fog is what the name implies—a fog of spray produced by the high pressure of Hayes Sprayers and the Hayes Scientific Nozzle.

Fruit-Fog thoroughness is due to its penetrating power—not to force. It works in and around—up and down. It penetrates the densest foliage. It seeps into the tiniest cracks and crevices. Fruit-Fog thoroughly wets everything with just the right amount of solution. There is

no waste because Fruit-Fog does not drip. It requires less solution, therefore is more economical.

Hayes Sprayers Guaranteed

Hayes Fruit-Fog Sprayers are made to highest mechanical standards. We use only the finest materials. They are equipped with the famous Fairbanks-Morse "Z" Engine. Each outfit is tested to 500 lbs. pressure and guaranteed to maintain 300 lbs. working pressure at full rated capacity. The Hayes line consists of over 50 styles of hand power sprayers. There is a Hayes outfit for every spraying need.

Hayes power Sprayers are distributed from 24 points throughout the nation. At each of these points a stock of parts for the Sprayers and the Fairbanks-Morse engine are carried. No matter where you are located, a service point is within a few hours reach of you. It also assures more prompt delivery. This is vitally important to any user of power machinery.

Write for Spraying Manual

Mr. Favor, our scientific horticulturist, has just completed a wonderful book on modern spraying practice. Every orchardist should own one. This guide is a real text book, clearly and concisely written—a veritable encyclopedia on spraying. It is finely printed and durably bound. The published price is \$1.00. Yet we will mail you a copy if you send us the coupon with 25c in stamps or coin.

HAYES PUMP & PLANTER CO.
Department P

(5798)



Ask Mr. Favor

Mr. E. H. Favor, head of our nationally famous authority on fruit growing and spraying. For many years he was editor of one of our leading fruit papers and was actively associated with two state experiment stations in scientific work.

Mr. Favor's experience is at the command of any fruit grower in America. If you have any orchard problem that perplexes you just "Ask Mr. Favor." He will write to you personally.



Over
50
Styles

Hayes
Pump &
Planter Co.
Dept. P
Galva, Ill.

Enclosed find 25c.
Please send at once,
your new Spraying
Manual and big catalog
of Sprayers.

I have _____ Fruit Trees.

Name _____

P. O. _____ R. F. D. _____

Street and Number _____ State _____

NOW IS THE TIME TO SEND FOR THIS BIG STRAWBERRY BOOK FREE



Kellogg's GREAT Crops of Strawberries and How to Grow Them

This is the most valuable and most complete strawberry book ever written. It pictures in colors and fully describes the world's biggest money-makers:

Kellogg's New Race of Strawberries, big sparkling beauties; Kellogg's Big Four and Kellogg's Big Late, five prize-winners; and Kellogg's Everbearers, which fruit from June to November.

It also describes many other wonderful varieties, fully explains Kellogg's Free Service, "The Key to Strawberry Profits," and our big Cash Prize offer and gives actual reports from growers who make \$500 to \$1200 per acre each year from

KELLOGG PEDIGREE STRAWBERRY PLANTS

These are the highest-bred, heaviest fruiting and most profitable strawberry plants grown. They produce enormous crops and give big profits in all soils and climates. Kellogg customers everywhere are making \$500 to \$1200 per acre each year.

J. H. Embler, of North Carolina, made \$1200 from only three-fourths of an acre. This is at the rate of \$1600 per acre.

Kellogg Pedigree Plants offer you the same opportunity. Every Kellogg Pedigree Plant is a thoroughbred.

They are selected from mother plants of the highest fruiting powers and often produce three quarts per plant in a single season. Kellogg Pedigree Plants are the result of more than 40 years of strawberry experience and the Kellogg trademark is your safeguard because it insures pure-bred, heavy-fruiting, true-to-name plants which are grown under the most ideal conditions where every demand of nature is fully supplied. Our FREE BOOK tells all about Kellogg Pedigree Plants, also pictures in colors and fully describes the world-famed

Kellogg Strawberry Gardens

A small Kellogg Strawberry Garden will fully supply your family with delicious strawberries the year 'round without cost and the surplus berries will pay all expenses and give you a big cash profit besides. You can have

Fresh Strawberries from June to November

and canned berries, jam, preserves and all kinds of strawberry dainties throughout the winter—all from a small Kellogg Strawberry Garden. Our FREE BOOK pictures in colors and fully describes Kellogg Strawberry Gardens. Write for this FREE BOOK at once and learn of the big crops, big profits and many other advantages you may enjoy from Kellogg Strawberries grown the Kellogg Way.

**Send Your Name and
Address for Our Big
FREE BOOK Today**

(Write Plainly)



R. M. KELLOGG CO.

360

THREE RIVERS, MICH.